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Hard limestone statue of an early Sumerian King, circa 3000 B.C. The faint markings at base of tunic, representing a goat-hair garment, have been extended as a border design.

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TEXTURÆ ANTIQUÆ, 11—SUMERIAN

A Patient's Life may depend upon the Reliability of a Hypodermic Dose

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Plaque from Lagash

Engraved with representations of the Patesi and his family, this plaque particularly commemorates the building of temples and fortifications, which characterised Lagash's golden age of peace and prosperity. The Patesi is here shown as a labourer carrying building materials. The garment worn is the simple Sumerian petticoat made of goat hair, the rough tongue-shaped strands of which appear on the plaque and are continued as a border design. Date, circa 3000 B.C.

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TEXTURÆ ANTIQUÆ, 12—SUMERIAN

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See also Wellcome's Medical Diary

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The Stele of Vultures, whereon a Sumerian Monarch of Lagash celebrated a great victory over the men of Umma, in which, according to the cuneiform inscription, he swept all before him, "like an evil storm." The dress of the King was made of the rough goat hair material to which the Greeks afterwards gave the name Kaunakes, and shows some advance on the single garment of the primitive Sumerians. Date, circa 2900 B.C.

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Observations ON PROPHYLACTIC INOCULATION AGAINST PNEUMOCOCCUS INFECTIONS, AND ON THE RESULTS WHICH HAVE BEEN ACHIEVED BY IT.[1]

BY SIR ALMROTH E. WRIGHT, M.D., F.R.S.,
IN CONJUNCTION WITH
W. PARRY MORGAN, M.B. CANTAB., L. COLEBROOK, M.B. LOND., AND R. W. DODGSON, M.D. LOND.

(*Concluded from p. 10.*)

SECTION IV.—*Results Obtained by Therapeutic and Prophylactic Inoculation of Pneumococcus Vaccine.*

WE have now completed the setting forth of the work which we did in connexion with the investigation of the antibacterial effects exerted by the blood upon the pneumococcus, and the testing and improvement of the methods for measuring it. We now go on to consider the results which were obtained when we passed from laboratory work to actual phylactic and prophylactic inoculation. We may begin with the former.

Treatment of Pneumonia by Vaccine-therapy.

It will be well to realise at the outset under what disabilities of ignorance we here pursued our work. The methods of blood examination which so often disappointed us when we were endeavouring to compare from day to day the opsonic power of the inoculated with that of the uninoculated natives, left us quite in the lurch when we set ourselves to make similar daily measurements in the case of our pneumonia patients. We were unable to trace upon the 50 immunisation curves which we plotted out in connexion with this work the effect of the doses of vaccine which we administered.

Accordingly, from first to last, we had to guide ourselves in our choice of doses and of the intervals between our doses only by *a priori* considerations and by the uncertain and flickering light which is furnished by temperature charts and the clinical symptoms. Influenced by the anticipation that the infected natives would be much more sensitive to pneumococcus vaccine than the uninfected native, we employed only doses of 2½ to 50 millions of pneumococci, and we conformed to the principle of giving in the less serious conditions larger, and in the more serious ones smaller, doses. In the ordinary case we repeated the dose at intervals of 24 to 48 hours.

These experiments—they have only the value of properly controlled reconnoitring experiments—were carried out in the hospital of the Witwatersrand Native Labour Association on tropical native patients. Many of these were, when admitted to hospital, already in an advanced stage of pneumonia. We accepted for our experiments only those who presented quite typical physical signs, and these were taken for treatment by vaccine-therapy or for treatment by the expectant method alternately, and strictly in the order in which they were admitted to hospital. We took for every uninoculated patient who was treated by vaccine-therapy an uninoculated control, and for every inoculated patient an inoculated control.

As the net effect of our treatment, we obtained the results which are set out in the subjoined table:—

TABLE XI.—*Showing the Case Mortality of Pneumonia in Tropical Natives treated respectively by Repeated Small Doses of Pneumococcus Vaccine and by Expectant Methods.*

Therapeutic method employed.	Number of cases.	Number of deaths.
Vaccine-therapy	159	50
Expectant treatment	149	48

We would in connexion with these results specially emphasise (1) that they apply only to tropical natives who, having a very low power of resistance, have contracted virulent infection; and (2) that they apply only to inoculations carried out on such natives with the doses specified above.

What we have to say in connexion with the prospects of therapeutic inoculation in pneumonia will be better deferred till we come to summarise and comment upon the results obtained by inoculation.

Prophylactic Inoculation against Pneumonia.

We pass now to study the results which were obtained by prophylactic inoculation. The inoculations which we carried out or initiated range themselves under six mass-experiments.

Mass-experiment No. 1.—This mass-experiment was undertaken in the compound of the Witwatersrand Native Labour Association. This compound, familiarly known as the W.N.L.A. Compound, is, as has already been briefly explained, the receiving station at Johannesburg where the gangs of native labourers, who are recruited for the general service of the mines, are housed for three to four weeks before they are drafted off to their respective mines.

We confined our operations in this and the four next mass-experiments to the tropical natives. For it is especially these who are ravaged by pneumonia. In each case, two or three days after the arrival of a new gang, the natives were lined up. We then, dismissing any who showed symptoms of illness inoculated as they filed past us every alternate man, reserving in this way half of each gang to serve as controls. As the men came up to us the inoculated were made to pass on one side, and the uninoculated on the other; and lists were made of the depôt numbers of the two groups—each man's identification docket being at the same time ruled across with a diagonal line, which was red or blue according as he was inoculated or reserved as a control. After the lapse of eight to ten days the natives were again ranged up, and every man who had on the first occasion been inoculated was now reinoculated, while the controls were still kept as controls. The red or blue diagonal line on each man's docket was at the same time converted into a red or blue cross, and a corresponding entry was made upon the lists.

Proceeding in this manner between the months of October, 1911, and April, 1912, with each gang of tropical native labourers as it arrived, we inoculated a total of 5963 and reserved 5671 to serve as controls.

The doses which were employed varied with each gang and subgroup—for we were, as has been indicated above, engaged in following out from day to

[1] Being Part II. of a Report to the Witwatersrand Native Labour Association on the Results of an Inquiry into the Causation, Prophylaxis, and Treatment of the Pneumonia which affects the Native Labourers, and in particular the Tropical Native Labourers in the Rand Mines. Part I. was published in THE LANCET of Dec. 14th (p. 1633) and 21st (p. 1701), 1912.

day the effect exerted on the blood by different doses and different schemes of administration. The average amount of vaccine given in the two successive inoculations taken conjointly was something like 300 millions of pneumococci. It in no case exceeded 600 millions.

The results of the inoculations are furnished, so far as relates to the three or four weeks dating from the first inoculation, in the register of pneumonia cases and deaths kept in the hospital attached to the W.N.L.A. Compound. The clinical diagnosis was in each case made by the medical officer, Dr. George A. Turner, or the assistant medical officer, and by one of us (W. P. M.). In the fatal cases the cause of death was controlled by post-mortem examination carried out by the medical officer.

Information with regard to the subsequent history of the inoculated and uninoculated is furnished in two sets of returns. We have, first, the special monthly returns made to us from the mines—the so-called *red and blue monthly returns*. These record the number of cases of pneumonia and deaths from pneumonia occurring respectively in the red and blue group of tropical natives. We have, secondly, the returns of deaths, and specifically of deaths from pneumonia, rendered thrice monthly from the mines to the Chamber of Mines for the information of Government.

The "red and blue" returns proved unserviceable for our purpose, inasmuch as the depôt numbers of those who contracted, and died from, pneumonia were not supplied, and also because the results applying to the separate gangs were not kept apart. The Government returns, since they furnish the depôt numbers of those who succumbed to pneumonia, are those we depend upon for the later results set forth in the table below. The results of the mass-experiment, ascertained as explained above, are as follows:—

TABLE XII.—*Showing the Number of Pneumonia Cases and Deaths from Pneumonia which occurred in the W.N.L.A. Compound between the Date of the First Inoculation and the Departure of the Natives to the Mines.*

—	Number of men in the group.	Cases.		Deaths.	
		Number.	Percentage.	Number.	Percentage.
Inoculated	5963	147	2·6	50	0·83
Uninoculated ...	5671	198	3·5	87	1·53

TABLE XIII.*—*Showing the Number of Deaths from Pneumonia reported from the Mines in each successive Month.*

—	Number of men in the group.	Second month.	Third month.	Fourth month.	Fifth month.	Sixth month.
Inoculated ...	5963	11	19	12	10	7
Uninoculated...	5671	29	19	15	13	8

* In compiling this table the fact that the native whose death was recorded in the report from the mines had passed before us, and had been inoculated or set aside as a control, was verified by reference to our records; the period which had elapsed since the date of the first inoculation and his death being at the same time ascertained.

It will be seen that the inoculation exerted a marked effect for two months, but that after the end of the second month the inoculated had no advantage over the uninoculated.

To obtain the measure of the total effect of inoculation on the death-rate from pneumonia we may combine the figures for the deaths in Tables XII. and XIII.

TABLE XIV.—*Showing the Effect which was exerted upon the Death-rate from Pneumonia in the first Two Months after Inoculation.*

	Number of men in the group.	Deaths.	
		Number.	Percentage.
Inoculated	5963	61	1
Uninoculated ...	5671	116	2

Mass-experiment No. 2.—After Mass-experiment No. 1 had been in progress for a certain time, and after it had appeared from the returns that favourable results were being obtained, we endeavoured to procure larger figures, such as would be really serviceable for statistical purposes, by undertaking "general inoculations" at the mines. We accordingly in December, 1911, and January, 1912, organised and ourselves took part in a number of "general inoculations" at the mines, and Dr. Turner, who helped us in this work, afterwards took independent charge of a number of others. We compute that in all 20,000 to 30,000 natives were in this way inoculated. Our intention was that the inoculated and the controls should, in connexion with these inoculations, have been chosen and registered in exactly the same way as had been done in the W.N.L.A. Compound; and we arranged for a special form of return in which the population of the mines should be divided up into (*a*) inoculated natives, (*b*) natives who were set aside as controls, and (*c*) natives who were excluded from the experiment either because they had joined later, or because they had for other reasons failed to put in an appearance at the inoculation parade. All sorts of difficulties, however, presented themselves in connexion with working out this scheme. It was found very difficult to get the records of the inoculated and controls accurately made when such large bodies of natives as were here in question were being dealt with. Again, the arrangements made for keeping track of the inoculated and uninoculated left in many places very much to be desired. Complications also presented themselves with regard to making proper allowance for natives who left the mines "time-expired" within the period of observation. Lastly, the inoculated turned out to be non-homologous with the controls, and there was—in contrast with what obtained in our other experiments—a sensible defect of homogeneity in the population of natives we were dealing with.

In connexion with the comparability of the inoculated and the controls it may be explained that the native labourers on the Rand come from as far south as the Cape, and from as far north as the Equator; and that there are between the different races of natives at the mines great differences with respect to tractability and susceptibility to pneumonia, the tropical natives being at once the most tractable and the most susceptible to pneumonia, and the East Coast natives, as we are informed, much more difficult to handle and at the same time more resistant to pneumonia. It will be readily understood that under these circumstances the inoculated group would tend to be more largely composed of the more tractable and, as it happens, more susceptible tropical natives, and the uninoculated group to be composed of the less tractable and, as it happens, less susceptible East Coast natives.

In connexion with the homogeneity of the population operated upon, it is to be observed that the fresh arrivals are (as will be seen from the figures for the uninoculated in Tables XII. and XIII., XV. and XVII.) the most susceptible to pneumonia, and that those who have been longer upon the mines have become more resistant to pneumonia. By consequence every group which is chosen from the native population, without reference to length of residence on the mines, will comprise persons of very different degrees of resistance.

As soon as these considerations had, one after the other, come home to us, we decided to bring this particular mass-experiment to a close, and to jettison, as open to fallacy, such statistical returns as had already been sent in to us in connexion with the experiment.

If, as we cannot in view of our other experience doubt, this mass-experiment gave good results, we suggest that the advantage was reaped in the form of a diminution in the general death-rate from pneumonia on the Rand.

Mass-experiment No. 3.—Having learned from experience in Mass-experiment No. 2 the difficulties which have to be confronted and the fallacies which have to be avoided in connexion with a general inoculation, we set ourselves to organise such an experiment upon better lines. The mass-experiment here in question was begun in May, 1912. It consisted in a series of general inoculations undertaken in 20 mines[2] and limited to tropical natives who had, in the season 1911–12, passed out to the mines from the W.N.L.A. Compound. In view of the fact that it had been shown in Mass-experiment No. 1 that there was, after two months, no difference between inoculated and uninoculated, the whole of the tropical natives of the year, with the exception of those few who left the compound for the mines in March and April,[3] were regarded as, for our purposes, homologous.

In each mine three general inoculations were undertaken, approximately a month intervening between the first and the second, and again between the second and the third inoculation; and the dose of vaccine was uniformly 150 million pneumococci. On the *first* occasion approximately half of the tropical natives were inoculated, and half were left as controls—giving a group of 3975 inoculated and a group of 4769 uninoculated. Among these last were counted in a certain number who were actually at work on the mine, but who for one reason or another were not actually forthcoming at the first parade. At the *second* general inoculation, half of those who had on the first occasion served as controls were inoculated; and of those who were on that occasion inoculated one moiety was reinoculated, while inoculation was withheld from the other with a view to find out how long the effect of the previous inoculation would make itself felt. At the *third* general inoculation, again, half of those who functioned at the second inoculation as controls were inoculated, and nearly all those who were previously inoculated were reinoculated.

Quite special care was devoted to ensuring accuracy in the records, the procedure adopted being as follows. For each mine two lists were prepared. On the first (hereafter called the "depôt list") the "depôt numbers," with which the natives leave the W.N.L.A. Compound, were arranged in serial order, the corresponding "mine numbers," which are given to the natives on arrival at their mines, being entered in the second column. On the second list (hereafter called the "mine list") the mine numbers were set down in serial order, and the corresponding depôt numbers were entered in the second column. This done, the depôt list was taken in hand by us, and we inserted in the third column, opposite the numbers, alternately a red or a blue diagonal line—the red line to indicate that the native was to be inoculated, the blue that he was to serve as a control. Corresponding entries were then made on the mine list.

When visiting the mine for the purpose of the general inoculation the natives were identified by their mine numbers as they passed up from their work, and they were inoculated or sent on uninoculated, according as their numbers were marked in red or blue, and the diagonal lines on the list were at the same time converted into crosses to show that these natives had been dealt with. Corresponding crosses were afterwards made upon the depôt list. The returns were made monthly by the medical officers of the mines on printed forms specially issued for this purpose. The return gave in connexion with each patient admitted to hospital his depôt number, the date of his admission, the diagnosis, and the date of his discharge or death.

In Table XV. we have grouped the results under the headings of results in the *first*, *second*, *third*, and *fourth* months. We have included in the results obtained by inoculation in the first month, not only the results which refer to the 3975 inoculated in the first general inoculation, but also the figures which refer to the natives who were inoculated for the first time at the second and third general inoculations. Moreover, in the case where a man was inoculated more than once we have set down in the "results obtained in the first month after inoculation" those which apply to him for the month following each of his several inoculations. For we find by analysis of the figures that the inoculation of men who have been inoculated one month previously with 150 millions gives neither better nor worse results than are obtained where men are inoculated for the first time.

We have dealt in a precisely similar fashion with the results which apply to the uninoculated. For instance, when, in making up our results for the first month, we come upon a man who was at each of three successive general inoculations taken as a control, we enter him in our statistics three times over (once for each several month) in order that he may serve as a control for the men who were inoculated at the first, second, and third inoculations respectively. Similarly, when we come upon a man who was inoculated for the first time at the third general inoculation, we include him twice over in our controls. And when we come upon a man who was inoculated for the first time at the second general inoculation, we include him once in our controls. We follow, *mutatis mutandis*, precisely the same procedure when dealing with the returns which apply to the second, third, and fourth months.

It will be seen that with the very small dose of vaccine which here came into application a very striking advantage was achieved in the first month after inoculation, but that advantage had nearly passed away by the end of the third month. The records are not continued beyond the fourth month because the mass-experiment next on our list was then begun.

[2] The mines chosen for the experiment were those which had received the largest number of tropical natives.
[3] These were excluded from the experiment and left out of the record.

TABLE XV.—*Showing Results for Four Successive Months after Inoculation.*

—	Number of men in the group.*	Cases of pneumonia.		Deaths from pneumonia.	
		Number.	Per-centage.	Number.	Per-centage.
Results for the First Month.					
Inoculated	10,629	125	1·1	22	0·21
Uninoculated ...	10,508	216	2·05	40	0·38
Results for the Second Month.					
Inoculated	6,787	76	1·12	15	0·22
Uninoculated ...	8,330	128	1·5	25	0·3
Results for the Third Month.					
Inoculated	6,103	59	0·96	13	0·21
Uninoculated ...	7,823	92	1·2	22	0·28
Results for the Fourth Month.					
Inoculated	6,103	44	0·72	16	0·26
Uninoculated ...	7,823	68	0·87	20	0·25

* In view of the fact that the corrections which would be applicable under the heading of deaths and repatriations would be quite insignificant, we have not troubled to deduct them from the numbers of the inoculated and uninoculated.

Mass-experiment No. 4.—This experiment consisted in a general inoculation carried out in November in 18 out of the 20 mines which were in question in the last experiment. It relates to those tropical natives who belonged to gangs which passed through the W.N.L.A. Compound in 1912, and who were accordingly due to remain in the mines till at least the end of January, 1913. Those who had in the last experiment served as controls were retained as such, and the rest were reinoculated—in each case with a dose of 1000 millions of pneumococci, grown in part on serum broth and in part on glucose serum broth. In this way there was obtained a group of 610 uninoculated, which for the purpose of such comparisons as those we are here making was undesirably small, and a group of 2322 inoculated. The results as ascertained from the returns rendered on the printed forms referred to in connexion with the last experiment were as follows:—

TABLE XVI.—*Setting Forth the Result Obtained for the Period of Five Months after the Date of the Inoculation.*

—	Number of men in the group.	Cases of pneumonia.		Deaths from pneumonia.	
		Number.	Per-centage.	Number.	Per-centage.
Inoculated	2322	70	3·0	20	0·86
Uninoculated ...	610	21	3·4	8	1·3

The question as to why larger advantage was not here reaped from inoculation is reserved for discussion in our summary of results.

Mass-experiment No. 5.—This experiment was undertaken upon the tropical natives who arrived in the compound of the W.N.L.A. between the middle of August and the end of November, 1912. The chief objects that it had in view were: (*a*) the determination of the optimum dose of pneumococcus vaccine for prophylactic uses, and (*b*) the decision of the question whether cultivations on glucose serum broth furnished a better vaccine than cultures on the ordinary serum broth. The inoculations were carried out exactly as in the case of Mass-experiment No. 1, with the difference that only every fifth native was taken as a control. The procedure adopted with regard to dosage was to take for the general inoculation in each case doses which had been previously ascertained to be perfectly safe, and then to reconnoitre by inoculating a small group with larger doses.* Advancing in this manner we obtained for study a series of six groups.

The general results may be summarised as follows: Employing a *vaccine prepared by cultivating the pneumococcus on blood broth* and a dose of 250 millions, we obtain, for a period of one month after inoculation, a reduction of the incidence from 7 per cent. in the controls to 3·7 per cent. in the inoculated; and a reduction of the death-rate from 2·9 per cent. in the controls to 1·5 per cent. in the inoculated, that is to say, in each case a reduction equivalent to about 50 per cent. With a dose of 500 millions of the same vaccine we obtain, for the first three months after inoculation, a reduction of about 25 per cent. in the incidence and nearly 50 per cent. of the death-rate. With 1250 millions of the same vaccine we obtain a much less favourable result: a reduction, on a period of three months, of 30 per cent. in the incidence and of only 20 per cent. in the death-rate. We may presume that the dose here employed was too large. Employing *a vaccine prepared by cultivating a pneumococcus on glucose blood broth* we obtain, for a period of two months, with a dose of 500 millions a reduction of 50 per cent. in the incidence and of 40 per cent. in the death-rate. With a dose of 1000 millions we obtain,

TABLE XVII.†—*Showing the Results obtained by the Inoculation of Various Doses of Pneumococcus Vaccine grown on Blood Broth and Glucose Blood Broth respectively.*

—	Number of men in the group.	First month.		Second month.		Third month.		Fourth month.		Fifth and sixth months.	
		Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
(A) Results obtained by the Inoculation of 250 millions of Pneumococci grown on Blood Broth.											
Inoculated ...	646	24	10	17	5	14	4	9	2	16	5
Uninoculated ...	626	44	17	17	5	12	4	15	5	16	6
(B) Results obtained by the Inoculation of 500 millions of Pneumococci grown on Blood Broth.											
Inoculated ...	759	25	8	16	4	17	2	14	4	19	8
Uninoculated ...	764	46	19	21	6	17	5	18	5	20	6
(C) Results obtained by the Inoculation of 1250 millions of Pneumococci grown on Blood Broth.											
Inoculated ...	1582	37	17	40	10	28	10	17	6	44	13
Uninoculated ...	791	23	10	31	8	21	6	12	3	14	7
(D) Results obtained by the Inoculation of 500 millions of Pneumococci grown on Glucose Blood Broth.											
Inoculated ...	463	18	10	7	1	9	3	7	2	7	5
Uninoculated ...	457	35	14	14	5	10	3	12	4	10	4
(E) Results obtained by the Inoculation of 1000 millions of Pneumococci grown on Glucose Blood Broth.											
Inoculated ...	650	20	6	20	3	10	2	6	3	14	3
Uninoculated ...	595	37	16	18	6	15	4	15	4	14	4
(F) Results obtained by the Inoculation of 2500 Pneumococci grown on Glucose Blood Broth.											
Inoculated ...	1582	47	17	42	8	28	5	21	10	35	8
Uninoculated ...	791	23	10	31	8	21	6	12	3	14	7

* We found in these experiments that doses up to 40,000 millions of pneumococci produced nothing more than a very slight constitutional disturbance and a very small rise of temperature. This is in good accord with the generalisation (*vide supra* Section II) that what counts in the case of an inoculation is not the actual quantum of vaccine we incorporate, but the quantum of antigen set free from it in the organism of the patient.

† It is to be observed that the results of those inoculated with reconnoitring doses are excluded from consideration, and that the uninoculated who serve for controlling the effect of one dose are often the self-same individuals as serve for the controlling of another dose.

over a period of three months, a reduction of 30 per cent. in the incidence and of over 60 per cent. in the death-rate. With a dose of 2500 millions we again obtain less satisfactory results; a reduction of just over 20 per cent. in the incidence, and a reduction of 35 per cent. in the death-rate.

There can be extracted from the statistical data which are available in connexion with this mass-experiment, not only conclusions bearing on the question of the relative efficacy of the various doses of vaccine which were administered, but also valuable information bearing on the question of the production of a negative phase—information which has, as we shall see, an important bearing on the question of the utilisation of vaccine in the treatment of pneumonia. The data which seem to us important from this point of view are set out below in the form of a table.

The facts which are set forth in this table are, as will be seen, very remarkable. Associating together the figures which apply to Groups A, B, D, and E; i.e., the groups which received doses up to 1000 millions of pneumococci, we find that, in the first four days after inoculation, 2500 inoculated had an incidence-rate of 0·52 per cent., and a death-rate in connexion with these cases of 0·16 per cent., while 750 [4] controls had an incidence-rate of 1·4 per cent., and a death-rate in connexion with these cases of 0·84 per cent. In other words, the uninoculated had an incidence-rate nearly three times and a death-rate five times greater than the inoculated.

TABLE XVIII.

	Number in group.	Number of cases of pneumonia which developed.																	
		First day.		Second day.		Third day.		Fourth day.		Fifth day.		Sixth day.		First six days.	
		Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Group A (inoculated with 250 millions)	646	—	—	—	—	1	1	2	1	—	—	—	—	3	2
Control group	626	1	1	4	1	3	1	2	2	—	—	2	2	12	7
Group B (inoculated with 500 millions)	759	—	—	2	—	1	1	—	—	3	1	1	—	7	2
Control group	764	1	1	5	2	3	1	2	2	—	—	2	2	13	8
Group C (inoculated with 1250 millions)	1582	8	4	2	—	1	1	1	—	—	—	—	—	12	5
Control group	791	1	1	2	2	—	—	—	—	—	—	1	—	4	3
Group D (inoculated with 500 millions glucose vaccine)	463	1	1	—	—	1	—	—	—	—	—	—	—	2	1
Control group	457	1	1	3	1	3	1	1	1	—	—	2	2	10	6
Group E (inoculated with 1000 millions glucose vaccine)	650	—	—	1	—	2	—	2	—	—	—	1	—	6	—
Control group	596	1	1	4	2	3	1	1	1	—	—	2	2	11	7
Group F (inoculated with 2500 millions glucose vaccine)	1582	7	3	11	2	1	1	3	—	2	2	—	—	24	8
Control group	791	1	1	2	2	—	—	—	—	—	—	1	—	4	3

Again, associating together the figures which relate to Groups C and F—groups which received doses of over 1000 millions of pneumococci—we find that 3200 inoculated had for the same period an incidence-rate of 1·1 per cent., and a death-rate in connexion with these of 0·32 per cent., while 800 controls had an incidence-rate of 0·4 per cent., and a death-rate also of 0·4 per cent.

Two important conclusions follow: the *first* is that pneumococcus inoculation undertaken with doses up to 1000 millions had a marked effect in aborting pneumonia and in diminishing the case mortality. Or we may phrase it otherwise. Vaccine therapy as applied to the treatment of pneumonia is successful when doses of 250 to 1000 millions are given in the incubation stage of the disease. The *second* conclusion is that inoculation undertaken with doses of over 1000 millions of pneumococci may perhaps temporarily increase the incidence-rate of pneumonia.

It is perhaps of interest to point out that these conclusions are essentially the same as those formulated in connexion with plague vaccine by Mr. Haffkine, immediately after he had carried out his first mass-experiment in the Byculla Jail, Bombay, in 1898. In that experiment, as in the mass-experiment we are here dealing with, a decisive difference in favour of the inoculated half of the population manifested itself already within 24 hours. And the view that Mr. Haffkine maintained (in contravention to that held by one of us) that plague vaccine does not produce a negative phase, and that it has the power of aborting an incipient attack, was afterwards established by evidence accumulated by Miss Alice Corthorn, M.D.,[5] and Surgeon-General W. B. Bannermann, I.M.S.[6] In connexion with this all that requires to be said is that the generalisations in Section II. of this Report—generalisations which have been reached only after years of further work—have made it intelligible that a negative phase should manifest itself with large doses of typhoid vaccine, a vaccine which is easily broken down in the normal organism, and again with all vaccines after the organism has, by foregoing immunising response, acquired bacterioclastic power, and that this phase should make default in the uninfected organism, and in the early stages of infection when vaccines, such as plague vaccine and pneumococcus vaccine which are with difficulty broken down in the body, are inoculated.

In concluding this account of the results obtained in Mass-experiment No. 5 we may profitably advert to one more general consideration. It is, as will presently be brought out more fully in Section V., reasonable to expect that an effective inoculation will give an additional bonus in the form of a diminution in the morbidity which comes upon the record under the heading of "Other Diseases." In point of fact, the records which relate to the particular mass-experiment we are here discussing show such a reduction. We have our bonus in the form of a 15 per cent. reduction in the "other diseases" of the inoculated, the figures being: *inoculated*, 6224; *uninoculated*, 1545. Cases of sickness other than pneumonia: in *inoculated*, 2154; in *uninoculated*, 620.

We now pass to our sixth and last mass-experiment.

Mass-experiment No. 6.—This mass-experiment was undertaken upon the natives employed in the Premier Diamond Mine—a mine which, despite the fact that it employs no tropical labour, has always suffered very severely from pneumonia. We began

[4] This figure is arrived at by taking the actual number of men who served as controls for Groups A, B, D, and E.

[5] Brit. Med. Jour., Jan. 25th, 1902.
[6] Ibid., Sept. 14th, 1901.

with a general inoculation on Jan. 21st, 1912, inoculating at a sitting about 4000 natives. The experiment thus begun was followed up by a methodical inoculation of the recruits who joined the mine. These inoculations were very admirably organised, carried out, and recorded by Dr. J. C. A. Rigby, who was very ably assisted by Mr. H. P. Sheridan. From Jan. 21st onwards till March 15th, 1912, every second native was inoculated as he arrived at the mine. From that date onwards only every third man was kept as a control, and gradually as it became more and more evident that good results were being obtained an increased proportion of the recruits were inoculated.

At the outset the dose which was employed was 200 million pneumococci, and gradually as it became clear from the results that were coming in from Mass-experiment No. 5 that the employment of larger doses was indicated the doses were gradually increased to 250 million, then to 500 million, until finally a dose of 1000 million was reached.

Returns which were very carefully prepared were furnished to us every month, and we were further, at the end of the first six months, and again at the end of the first year of the experiment, furnished with a detailed synopsis of the results. These returns are our authority for the facts set forth below.

TABLE XIX.—*Showing the Results for the Whole Native Population of the Mine for the Year beginning Jan. 22nd, 1912, and ending Jan. 21st, 1913.*

—	Daily average strength of the group.	Cases of pneumonia.		Deaths from pneumonia.	
		Number.	Percentage.	Number.	Percentage.
Inoculated	9009	508	5·13	154	1·55
Uninoculated ...	4520	467	10·33	145	3·21

We subjoin also, for reasons that will presently appear, another statistical record which excludes all those who were on the mine on Jan. 21st, 1912, and takes into account all the natives who came to work on the mine during the next 12 months. It may be remarked that the fact that the native at this mine usually works on a six months' contract would make the daily average population equivalent to about half the number of the natives who join in the year.

TABLE XX.—*Showing for the period Jan. 22nd, 1912, to Jan. 22nd, 1913, the Results for the Natives who came in that year to work on the Mine.*

—	Number of natives who joined the mine.	Cases of pneumonia.		Deaths from pneumonia.	
		Number.	Percentage.	Number.	Percentage.
Inoculated	17,431	376	2·16	120	0·7
Uninoculated ...	6,77[illegible]	348	5·14	120	1·77

Finally, in connexion with the mass-experiment here in question, we may give the figures for the corresponding period relating to the incidence and death-rate of "other diseases" in the inoculated and uninoculated sections of the population. These figures are as follows: *Inoculated*, average daily strength, 9909; incidence rate, 47·2 per cent.; death-rate, 0·93 per cent. *Uninoculated*, average daily strength, 4520; incidence rate, 106·6 per cent.; death-rate, 1·90 per cent.

SECTION V.—*General Survey of the Results obtained by Therapeutic and Prophylactic Inoculation of Pneumococcus Vaccine; and Critical Comment.*

Vaccine-therapy of Pneumonia.

In connexion with the vaccine-therapy of pneumonia we have, on the one hand, the fact that inoculation in the form of small doses frequently repeated was absolutely ineffective (Table XI.); and, on the other hand, the fact that inoculation in the form of a single large dose, administered in the incubation period, often arrested the disease and averted death (Table XVIII.).

That the difference of dose determined the difference of event is to us as good as certain. Let us—recalling to mind the general propositions formulated in Section II.—here take note of the fact that the doses which we found inoperative were doses from which there could, at best, have been expected that they should elicit a local immunising response. Further, let us note that the evocation of such response would be dependent upon a sufficiency of antigen passing into solution in the lymph at the seat of inoculation.

Lastly, let us note that it is quite likely that microbes which are ingested by phagocytes may, from the point of view of the immunising reaction, be left quite out of regard.[1] In connexion with this it is almost superfluous to point out that when comparatively small numbers of microbes are inoculated, and when they come into contact with a lymph which possesses opsonic power, but only inappreciable bacterioclastic power, they will almost certainly sooner or later be ingested by phagocytes.

In general contrast with all this would be what would happen when a large dose of vaccine is inoculated. In this case the microbes would be carried on into the main lymphatic current or blood-stream, with the result that inevitably some would escape phagocytosis, and inevitably some of these would, even if the blood had but very little bacterioclastic power, be broken down. And there would supervene upon the convection of the antigen to the tissues through the blood a systemic immunising response.

As we see no reason to suppose that the conditions appreciably alter, and as we know that the bacterioclastic power of the blood does not sensibly increase when pneumonia develops, we think it reasonable to expect that the favourable results which were obtained by the inoculation of doses of 250 to 1000 millions of pneumococci would repeat themselves if this treatment were applied in the early stages of pneumonia. We were prevented from undertaking a therapeutic mass-experiment upon these lines in the season 1912–13 by the fact that we were then engaged upon Mass-experiment No. 5 (that which furnished the data we have here been reviewing), and had to be on our guard against falsifying the results it was giving by any therapeutic interference.

[1] We hark back here to an objection which was long ago (as we think inappositely, because the blood fluids exert a bacteriolytic effect on the cholera vibrio) brought forward by Metchnikoff in connexion with Ferran and Haffkine's anti-cholera inoculations.

Prophylactic Inoculation against Pneumonia.

The comparative statistics which have been set forth above testify, as has been seen, in every case to a reduction in the incidence-rate and death-rate of pneumonia in the inoculated.

In adjudicating upon a procedure of prophylactic inoculation the following general theses must be taken into account.

1. The advantage derivable from a prophylactic inoculation will be limited by the patient's power of immunising response. In accordance with this, one would not expect to achieve as much by inoculation in a naturally non-resistant population—such as that represented by the tropical native labourers on the Rand—as in a more resistant population—such as is, by common repute, represented by the native labourers on the Premier Mine. We may, perhaps, bring into relation with this consideration the fact that we have, as the result of the application of prophylactic inoculation to the tropical natives on the Rand, in *Mass-experiment No. 1* (*Tables XII. and XIII.*) a reduction of 37·5 per cent. in the death-rate of the inoculated upon an observation-period of six months; in *Mass-experiment No. 3* (*Table XV.*) a reduction of 31 per cent. in the death-rate of the inoculated upon an observation-period of four months; and in *Mass-experiment No. 5* (*Table XVII., Group E*) a maximum reduction of 50 per cent. in the death-rate of the inoculated upon an observation-period of six months; while we have upon the Premier Mine (*Mass-experiment No. 6, Table XX.*) upon a 12 months' observation-period a reduction of 60 per cent. in the death-rate for the inoculated.

2. The advantage derivable from prophylactic inoculation will depend upon the degree to which the population to which it is to be applied has already run the gauntlet of the particular microbic infection in question. In accordance with this, one would expect greater advantage from inoculation when applied to a population newly arrived in the field of infection, than from inoculation applied to a population which had been long in such a field *continuously* exposed. It falls in with this, that while we have in the inoculated in Mass-experiment No. 5, Group E—an experiment in which the uninoculated had an incidence-rate of 15 per cent., and a death-rate of 5 per cent. over a five-month period—a reduction of 35 per cent. in the incidence and of 55 per cent. in the deaths; we have in the inoculated in Mass-experiment No. 4 [8]—an experiment in which the uninoculated had an incidence-rate of 3·4 per cent. and a death-rate of 1·3 per cent. for the same period—a reduction of only 10 per cent. in the incidence-rate and of 34 per cent. in the death-rate. We may further note that we have, in connexion with Mass-experiment No. 6, in the case of the inoculated a reduction in the incidence-rate of 50 per cent., or 58 per cent., and a reduction in the death-rate of 52 per cent., or 61 per cent., according as we take as our controls (as in Table XIX.) the population already on the mine, or (as in Table XX.) the population of new arrivals.

3. Where in comparative statistics we find that the difference between the inoculated and the uninoculated is after a certain time effaced, this does not necessarily indicate that the immunity of the inoculated is diminishing. We may be witnessing, instead of a descent of the inoculated to the level of the uninoculated, an ascent of the uninoculated to the level of the inoculated. This is, presumably, the true interpretation of the fact that our inoculated natives displayed only for a comparatively short period an advantage over the uninoculated. For we have uniformly, in all our records (Mass-experiments Nos. 1, 3, and 5; Tables XII. and XIII., XV., and XVII.), and therefore presumably independently of any change in the external conditions—instead of a progressive falling off in the incidence-rate and death-rate of pneumonia in the inoculated, a progressive improvement in the incidence and death-rate in the uninoculated.

The point of interest which here suggests itself is the question as to how the ascent of the uninoculated to a higher level of immunity, and the accompanying progressive improvement in the figures for the inoculated, which is a feature of all the statistics, is to be accounted for. Two alternative hypotheses here suggest themselves. The attainment of a higher level of immunity may be explained by supposing that the most susceptible individuals have been weeded out by death from each group. But this is not a very acceptable hypothesis, for it is hard to believe that infection can ever be distributed over a population in so uniform a manner as punctually to pick out and kill all the more susceptible individuals. It is much more probable that the progressively increasing resistance in both the inoculated and uninoculated groups is achieved by processes of self-immunisation consequent upon minor infections which affect practically the whole mass of the population. We have what we think presumptive proof that such agencies are at work in the fact, already adverted to above, that there were, in practically every group of four to six uninoculated natives whom we employed as controls, some who were almost certainly suffering from minor pneumococcus infections. Not only does this theory furnish, as it seems to us, a satisfactory explanation of the progressive improvement in the figures for both inoculated and uninoculated, but it puts into our hands, as we think, a clue which may guide us in our search for the optimum dose of a vaccine for prophylactic use. In the case where we institute a comparative experiment—and we have the results of such a comparative experiment set out in Table XVII., Groups A and E—*employing in* one group (let us call it *Group No. 1*) *a smaller*, and in another group (let us call it *Group No. 2*) *a larger dose;* and where we then find that in *Group No. 1* the figures, taken when those for the uninoculated become equally good, are inferior to those afterwards reached; and that in *Group No. 2* the figures, taken again when those for the uninoculated become equally good, are not afterwards improved upon—we may legitimately infer that in *Group No. 1* prophylactic inoculation left something undone which was afterwards achieved by self-immunisation; and that in *Group No. 2* prophylactic inoculation accomplished, so far as appears, all that self-immunisation was capable of achieving. It will be realised that this amounts to saying that the optimum dose, or series of doses, of vaccine is that which produces an immunising response which is incapable of any further reinforcement; and that we ought to aim at effecting by prophylactic inoculation all that living in the presence of infection, and having actual dealings with infection, is capable of achieving.

4. Comparative statistics furnish only a very incomplete account of the profit earned by any successful prophylactic inoculation. It has among

[8] In this mass-experiment the dose of vaccine employed was the same as that in Mass-experiment No. 5, Group E, and the culture medium employed in making the vaccine was also largely the same.

statisticians been too much the habit to give credit only for the profit shown upon comparative statistics, and to disallow credit for maintained advantage unless proof is produced that the incidence and death-rates of the disease have been, as the ordinary statistician would wish, maintained in the uninoculated section of the population. Examples of this method of auditing profits are furnished by the fact that when, in connexion with small-pox vaccination, the statistical records for France, which is very incompletely, and Germany, which is very completely vaccinated, are contrasted; or when, in connexion with typhoid inoculation, the condition in the army in India before typhoid inoculation is contrasted with its condition to-day, when the large bulk of the British troops are inoculated; or when, in connexion with that same process, a comparison is made between the statistics for the Jacksonville Camp in the Spanish-American War, where out of a strength of nearly 11,000 United States troops, all being uninoculated, at least 1729 contracted typhoid, and the statistics for the San Antonio Camp on the infected Mexican frontier, where nearly 13,000 United States troops, who were all inoculated, were massed with only one case of typhoid[9]; the comparison is in each case disallowed on the ground that there were not sufficient uninoculated controls interspersed among the inoculated, or that the contrasted populations were not quite homologous, or that the conditions to which they were exposed were not exactly alike. The statistical auditor who refuses to give any credit upon vouchers which have been left in some point incomplete is, of course, keeping himself well within the law. But he is leaving quite out of regard the equities.

When the question as to how we should evaluate the results of an effective inoculation process (and we may here deal specifically with pneumococcus inoculation) is regarded from this point of view—in other words, when we take a broad view of the probabilities—it will become clear that it would be altogether proper to claim credit:—*in connexion with the inoculated:* (*a*) for any diminished incidence and any diminished death-rate from pneumonia which is attested by comparative statistics for inoculated and uninoculated; (*b*) for any diminished incidence and death-rate from other pneumococcic infections (whether diagnosed as such, or undiagnosed) which come upon the record; and (*c*) for any diminished incidence and death-rate from infections which were not due to the pneumococcus, but were directly consequent upon pneumococcic infection. Further, *in connexion with the uninoculated* section of the community, credit may equitably be claimed (*d*) for any diminution in the incidence-rate and the case-mortality of pneumococcic infections — for the former because a reduction in the number of pneumococcic cases in the inoculated would diminish the general volume of infection; for the latter, because a reduction in the virulence of the infection might reasonably be expected from the diminished "passaging" (i.e., transference from case to case) of the infective microbe.

It is to be noted that it is only the establishment of the general principle that we may anticipate profits under each of these headings, and that these profits cannot equitably be left out of account, which is here vital. The matter of real concern in connexion with any effective inoculation procedure is that by it we are transported out of a vicious circle—a *circulus vitiosus* of infection and non-resistance, into a "propitious circle"—a *circulus felix* of increased resistance and diminished infection. In comparison with the establishment of this, it is a small matter that, when fairly entered upon a propitious circle, it becomes impossible to tell how much of the sum-total of effects is due to inoculation and how much to other causes.

With these preliminary explanations and reserves we may here subjoin a further table which has reference to the mass-experiment on the Premier Mine.

TABLE XXI.—*Showing for the Whole Native Population of the Premier Mine the Incidence and Death-rate for Pneumonia; the Incidence and Death-rate for "Other Diseases"; and also the Number of Working Days Lost through Illness; for the Months February to May,* in 1911, 1912, and 1913 respectively.*

—	1911	1912	1913
Population (daily average strength)	10,426	12,549	15,284
Proportion of the population inoculated	0	About 50 per cent.	About 92 per cent.
Incidence-rate of pneumonia	4 per cent.	1·28 per cent.†	0·74 per cent.†
Death-rate from pneumonia	0·97 per cent.	0·31 per cent.	0·14 per cent.
Incidence-rate of other diseases	31 per cent.	20·7 per cent.	14·4 per cent.
Death-rate from other diseases	0·51 per cent.	0·38 per cent.	0·34 per cent.
Number of working days lost per 100 native labourers	275	177	131

* We have been furnished with data for this comparison only up to May, 1913.

† In 1912 the incidence-rate was 0·86 per cent. for the inoculated and 1·7 per cent. for the uninoculated. In 1913 it was 0·6 per cent. for the inoculated and 3 per cent. for the controls.

SECTION VI.—*Concluding Considerations and Recommendations with Regard to the Measures to be taken to Combat the Pneumonia on the Rand.*

In considering what measures ought to be taken to combat the pneumonia on the Rand it is essential to start with a proper appreciation of the character and natural history of the disease. The salient facts in connexion with the pneumonia which affects the native labourers on the Rand are as follows:—

The disease is—as investigation, and in particular the investigation made by Dr. Turner in Tropical Africa, has shown—unknown, or practically unknown, in the native kraals. The disease has no special relation to the mining work on the Rand. It takes no heavier toll of the natives at work in the deep-level mines of the Rand than of those employed on the Premier Mines on open workings. Moreover, the disease is seen at its very worst in the compound of the W.N.L.A. among the newly arrived natives who have not yet begun their work on the mines. Again, the prevalence of pneumonia and other pneumococcic infections among the natives in the mines of the Transvaal can have no special relation to its climate or to its elevation above the sea level; for these infections caused a very heavy mortality among the African natives working upon the Panama Canal at sea level. And they also cause very serious loss of life among the negro labourers and soldiers in Rhodesia, the French African Colonies, the Egyptian Soudan, and

[9] Russell: United States Army Medical Department, Bulletin No. 2, January, 1913, p. 11.

elsewhere. Finally, we have the very material fact, which has been brought out in this report, that the blood of the African native is, so far as relates to its power of phagocytosing and killing the pneumococcus, very inferior to that of the European, and that the capacity for immunising response is also much less in the African than in the European.

These considerations make it practically certain that the prevalence of pneumonia on the Rand is to be ascribed to the bringing together into close contact in compounds of a population which has, as a racial character, a low resisting power to the pneumococcus. If this is so, it is obviously a circumstance which ought to dictate our plan of attack, and to determine in particular what place in our scheme of operations ought to be taken respectively (*a*) by measures which aim at preventing the convection of pneumonia from man to man; (*b*) by measures which aim at holding off influences which might impair the natives' resistance to infection; and (*c*) by measures which aim at increasing the natives' resistance to infection.

(*a*) Under the heading of "measures for avoiding the convection of infection from man to man" would come: measures for the earliest possible detection and isolation of cases of pneumonia; measures for the disinfection of the sleeping quarters from which such cases have been removed; measures for diluting the infective matter in these sleeping quarters by schemes of ventilation; and lastly, measures for the quarantining of recovered pneumonic patients with a view to the prevention of a spread of infection from these. With regard to these, we may remark that, while we see no reason to doubt that each of these measures would in its degree counteract the spread of infection, we have grave doubts as to whether they could ever be made effective measures for combating pneumonia on the Rand. We are taking into consideration here, *first*, the fact that it would be a very difficult thing to carry out upon the Rand measures for the early detection and subsequent quarantining of pneumonic cases; *secondly*, the fact that we have on the Rand not only to deal with pneumonia, but also with very numerous cases of lighter forms of pneumococcic infection; and, *thirdly*, the fact that the pneumococcus lives saprophytically on the mucous membrane of a majority of healthy men. Moreover, in connexion with the question of the adoption of measures for preventing the spread of pneumonic infection from man to man, it will be well never to leave out of sight the fact that given a population which, like a European population, possess a relatively high resistance to the pneumococcus, all such measures can be dispensed with.

(*b*) Coming now to "measures for holding off influences which might impair the native normal resistance to infection"—and we have in view here such a measure as the provision of "change houses"[10] for safeguarding the native against chills—we are of opinion that the place of such measures in a plan of campaign against pneumonia is at best a very subordinate one. In this connexion we would again emphasise that the really predisposing moment in the case of pneumonia is to be found, not in those incidental and temporary impairments of resisting power which may occur in connexion with mining work, but in that abiding defect of resisting power which is normal to the native. We have here clearly a fact which dictates recourse to inoculation, and which indicates that a very important place in our scheme of operations ought to be assigned to this measure.

(*c*) Our recommendations in connexion with inoculation are as follows:—

We recommend that prophylactic inoculation should, except only in the case where a mass-experiment is being undertaken, be applied as a routine measure to every native on recruitment. In the light of the results furnished by Mass-experiment No. 5 (Table XVII.), we suggest that a dose of 1000 millions of pneumococci cultivated upon glucose blood broth might appropriately be employed as the ordinary prophylactic dose.

We further recommend that the natives should be reinoculated after the expiration of four months, and that here again a dose of 1000 millions of pneumococci should be employed.

We would not for the present advise any general application of therapeutic inoculation. We would, however, urgently recommend that it should be made the subject of further investigation.

We regard the continued prosecution of research in connexion with inoculation as essential to the attainment of the best results.

We recommend that such research should comprise, on the one hand, the institution of properly controlled mass-experiments, and, on the other hand, the systematic measurement of the protective substances produced in response to inoculation. In such measurements we suggest that the method for measuring the phagocyto-bactericidal power of the blood which is described in this report, or some modification of that method, should be utilised.

In connexion with prophylactic inoculation, the task of research should be to obtain confirmation of the conclusion that we have in 1000 millions the optimum dose for prophylactic purposes. It would also be well to make certain that reinoculation after a period of four months is really required.

In connexion with therapeutic inoculation, the first task of research should, we think, be to institute a mass-experiment in which one large dose of vaccine should be given to the patient at the outset of his pneumonia attack. We suggest that a dose of 500 millions might be tentatively employed in such an experiment, and we think that in such an experiment every alternate patient should be taken for a control.

In concluding this report we desire again to express our obligations to Dr. G. A. Turner for unwearying assistance in connexion with the inoculations which we carried out on the Rand, and to Dr. F. C. Lister, Dr. A. R. Friel, and Mr. G. Friel for valuable help in our laboratory work. We desire also to thank Mr. P. Ross Frames, chairman of the Research Committee and managing director of the Premier Mine, for the helpful assistance he afforded us in both of these capacities. And to Dr. J. C. A. Rigby and to Mr. H. P. Sheridan we owe a very special debt of thanks for their eminently successful achievement—the mass-experiment carried out on the Premier Mine.

Finally, the author of this report desires to express to Dr. W. Parry Morgan, who took independent charge of the inoculation work after March, 1912, his grateful acknowledgments for his initiative and forethought in planning Mass-experiments Nos. 3, 4, and 5, and for the solicitude with which he carried these out. In connexion with our work acknowledgments are also due to the excellent and conscientious labours of Mr. O. Slawkowsky, our chief laboratory assistant, and of Mr. P. Hardwick, our statistical clerk.

[10] It may be explained that "change-houses" are sheds in which the native is compelled to change clothes before he emerges from the mine into the open air.

UNPOLISHED RICE AND THE PREVENTION OF BERI-BERI.

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SINCE the publication of our completed report on the etiology of beri-beri in 1911 communications have been published by several investigators who have sought to isolate from rice polishings the substance or substances which are of value in the prevention of beri-beri.

We found that by the extraction of polishings with acidulated alcohol a preparation was obtained which was effective in preventing the occurrence of polyneuritis in fowls fed on polished rice and also in curing that disease. It is to extracts prepared by this method or similar ones (for an effective extract can also be prepared by means of acidulated water) that physiological chemists have devoted their efforts.

In this field of investigation much work has been done by Funk, who tested the various substances which he isolated on pigeons suffering from polyneuritis induced by the consumption of polished rice. To a curative substance prepared by him he assigned the name "vitamine," and gave it a formula calculated from the results of one analysis; this formula he subsequently amended. As the molecular weights are unknown, and as, in the case of complex substances, from the results of a combustion, several formulæ can usually be worked out, it is obvious that the formulæ cannot be accepted without question. Moreover, by the variety of formulæ he has given it is suggested that the substances were impure, and but for the fact that he has reduced the volume of the material in which the active substance or substances are contained, a proprietary name might quite as reasonably have been applied to the curative fraction isolated by us from rice polishings and known to be a mixture of substances. Indeed, Tsuzuki has applied the name "antiberiberin" to the moist, black, sticky residue obtained on evaporation of the alcoholic extract.

Reasonable allowance must be made for the magnitude and difficulties of the task confronting physiological chemists, but it appears that the methods employed in the work need to be improved; those now in use are crude, and are sources of errors because of the incomplete separations they effect, and because of the decomposition they so constantly produce. It may well be that the substance or substances which prevent beri-beri are elusive bodies and may never be isolated in a state of purity, but these problems in no way concern the physician or administrator whose work deals with the prevention and cure of beri-beri.

The fact that the continuous consumption of polished rice as the staple of diet gives rise to beri-beri in man rests on quite other testimony than that derived from experiments on fowls and pigeons, and the fact is equally well established that when rice-eaters substitute unpolished rice for polished rice the disease does not occur.

Further valuable confirmatory evidence has recently been obtained from the results of the expedition conducted by Mr. A. F. R. Wollaston and Mr. Kloss into the interior of Dutch New Guinea, where they had as their objective the exploration of the Snow Mountains.

The task which confronted them was, as both of them well knew, a formidable and an arduous one. Previous experience had shown them that the occurrence of beri-beri meant failure. Thus the Goodfellow expedition of 1909–1911, undertaken to explore the Snow Mountains, was decimated by disease; and Mr. Wollaston, the medical officer to that expedition, has recorded that "in the six months from the beginning of June to the end of November, 39 men showed definite signs of beri-beri and 7 deaths were directly attributable to this cause." The staple of diet was polished rice. A similar fate had befallen all previously recorded expeditions into this country save the one conducted by Moszkowski, in which unpolished rice was used, but as his expedition numbered only 10 men the results were inconclusive.

Convinced therefore that the work of the expedition could not be accomplished if their camp-followers and guard were fed on polished rice, Mr. Wollaston and Mr. Kloss decided that only unpolished rice should be used.

Here another difficulty confronted them. The only kind of unpolished rice which can be purchased in the Malay Peninsula in the open market is that known as parboiled rice. To this kind of rice the natives of India who immigrate to this country are accustomed, and by them it is preferred. It has, however, an objectionable odour and appearance; irritating properties have been ascribed to it, and it has even been thought to predispose to dysentery and the like diseases. Parboiled rice can be prepared free from objectionable properties, but the manufacturers will not so prepare it, and abundant practical experience has shown that the use of parboiled rice is not the solution of the problem of beri-beri prevention.

Braddon held that parboiled rice was a preventive of beri-beri because it had been "cured," and that white rice was harmful because of some poisonous substance contained in it. The excellent results obtained by the use of parboiled rice in the Government institutions of Malaya confirmed the accuracy of his view that such rice was a preventive of beri-beri, but when it was proved that white rice was harmful because in the process of polishing the subpericarpal layers were removed and that parboiled rice was only a variety of unpolished rice, the problem was entirely altered and the prevention of beri-beri was established on a rational basis.

Chinese, Malays, Javanese, and other rice-eating natives may, when deprived of their liberty in prison, be compelled to partake of parboiled rice, but on regaining their liberty they will not continue its use. If, on the other hand, an ordinary unpolished rice or "kampong" rice were in use in such places, a demand would be created for that rice, which would then become available commercially. In this way some real progress might be recorded towards the eradication of a preventable disease.

Fortunately, in Java, where the use of parboiled rice is unknown, Mr. Wollaston and Mr. Kloss were able to obtain a supply of unpolished rice adequate for the needs of their expedition. In addition, acting on the suggestion of the writers, they took with them as an additional safeguard a supply of a remedial agent, the use of which we have advocated in the prevention and cure of beri-beri.

The expedition consisted of 204 natives of the Malayan Archipelago, who were rice-eaters, with

2 Europeans and 4 Eurasians. They left Batavia about the end of August, 1912, and reached Dutch New Guinea in the middle of September. After reaching the coast the explorers constructed canoes and ascended the Utakwa river. They went as far as possible by water, the journey occupying two days. They then proceeded overland by stages, each stage occupying three days. Camps had to be constructed at each stage, an undertaking of considerable magnitude and one which occupied much time. Four and a half months after they had arrived at the coast they reached the Snow Mountains and then commenced their return journey to the coast, which was reached in two months.

The expedition was in all of seven months' duration, and despite the laborious nature of the work among the 204 rice-eating natives no single case of beri-beri occurred. The general health conditions of the expedition are reported to have been excellent.

The daily ration issued to the natives was as follows: rice, 700 grm.; fish or meat on alternate days, 150 grm.; kachang idju, 200 grm.; Javanese sugar, 50 grm.; coffee, 20 grm.; tea, 5 grm.; salt occasionally, 20 grm. No fresh fish or meat was available during the expedition, only salt fish and meat preserved in syrup.

Transverse section of a grain selected from the rice used on Wollaston-Kloss Expedition. A, Pericarp (valueless). B, Subpericarpal zone, the removal of which in the process of polishing converts a harmless rice into a harmful one.

Two varieties of unpolished rice were used. One with a red pericarp was employed during the first five months and one with a silvery pericarp was employed during the last two months. Neither rice could be considered satisfactory from the cosmetic standpoint. In the case of the red variety only a partial removal of the pericarp had been effected, and in the case of the silvery variety no attempt had been made to remove this valueless layer of the grain. Despite the appearance no objections were raised by the natives to these rices, but we think that steps ought to be taken to induce manufacturers to remove the pericarp and thereby improve the appearance of the grain.

In this connexion attention must again be directed to the valueless character of this structure. In previous reports the evidence has been furnished on which this statement is based, but writers, with but one or two notable exceptions, refer to the pericarp as the structure whose removal makes the rice harmful, whereas it is the removal of the subpericarpal layers which is attended by this undesirable result.

The photograph of a transverse section of selected grain (see illustration), which was prepared by the method described on a previous occasion, shows clearly the position of these structures. No real progress in the application of preventive measures can be made until there is available commercially an unpolished rice from which the pericarp has been removed.

Samples of both the rices used were analysed here, with the following results:—

	Red variety.		Silvery variety.
Protein	9·22 per cent.	.....	9·41 per cent.
Fat	1·14 ,,	.....	2·10 ,,
Carbohydrate	78·64 ,,	.....	76·57 ,,
Ash	1·06 ,,	.....	1·50 ,,
Moisture	9·94 ,,	.....	10·42 ,,
P_2O_5	0·54 per cent.	.....	0·79 per cent.

It has been consistently advocated that a rice which yields not less than 0·4 per cent. of phosphorus pentoxide may safely be regarded as a harmless one. Both these rices are considerably over this standard, but only in the red variety did any of the grains show a partial removal of the subpericarpal layers, and in the silvery variety the grain had only been deprived of its husk.

Had the enterprise of manufacturers been so far stimulated that removal of the pericarp and embryos from these grains had been effected, the results would have been equally satisfactory as regards the prevention of disease, the analysis would still have yielded results in accordance with the standard of safety, and the cosmetic appearance of the foodstuff would have been greatly improved.

Based on the standards previously adopted the ration was ample, and the scientific findings are thus in complete accordance with the actual facts. The results of this expedition as regards beri-beri are in striking contrast with those which obtained in all previous large expeditions into Dutch New Guinea, and taken in conjunction with the observations and experiments previously recorded the absence of beri-beri on this occasion can only be explained in one way—that is, the absence of polished rice from the diet.

In 1909 we demonstrated: 1. That beri-beri as it exists in the Malay Peninsula is caused by the continuous consumption, as the staple of diet, of rice from which all or the greater part of the subpericarpal layers had been removed by the process of polishing. 2. That a satisfactory measure of the degree of polishing to which a rice had been subjected is the estimation of its total phosphrus in terms of phosphorus pentoxide. 3. That a rice which yields less than 0·4 per cent. of phosphorus pentoxide cannot safely be permitted to form the staple of a diet in man. The further evidence now adduced is in complete confirmation of the accuracy of these statements.

Writers from Southern Nigeria and Brazil have recently disputed the accuracy of these conclusions, but we are unaware that any systematic observations have been carried out in these countries

which would permit of a definite statement being made. When these are made it will be necessary to determine that the disease known in these countries as beri-beri is the same as the disease which is known by that name here. After all, beri-beri is only a form of polyneuritis, and students of this disease know that not only forms of polyneuritis of different origin have been called beri-beri, but that even diseases of which polyneuritis may not be a prominent feature, such as "epidemic dropsy," "Ceylon beri-beri," and the like, have been included under this name.

We have shown the mode of operation of the factors concerned in the etiology of beri-beri as it occurs in the Malay Peninsula. The painstaking researches of Highet and his colleagues have proved that the disease is of similar origin in Siam; and the work of Strong and Crowell has furnished similar evidence for the Philippine Islands. In regard to the Netherlands India these results are in complete accordance with those obtained by the very able Dutch investigators, Eijkman, Grijns, and Vordermann, who were pioneers in this field of research.

There is then in the countries mentioned an endemic and epidemic disease which presents certain clinical features, and is known to clinicians in these countries as beri-beri. For the occurrence of that disease the explanation has been discovered. The disease can be prevented, and, as we have shown elsewhere, may be cured. But, remembering the old adage that "prevention is better than cure," it is necessary to consider the practical application of preventive measures.

While fully appreciating the work of the scientists who seek to advance our knowledge on this subject, we must attend to the practical issues—namely, the reduction, if not abolition, of the heavy mortality which is yearly exacted by this disease. The determination of exact knowledge is arrived at by processes of abstraction and elimination. In the practical application of that knowledge the disturbing factors have to be reincluded, and it is undoubtedly the difficulty of this task in connexion with beri-beri which has delayed the application of preventive measures. But we are unable to convince ourselves that the difficulties are insurmountable. Political and commercial interests have too long been allowed to control the situation, and though such interests cannot be ignored they should not be given undue prominence. Resolutions on the subject have been passed at all three meetings of the Far Eastern Association of Tropical Medicine, and a resolution in almost identical terms was passed at the recent International Congress of Medicine. These pious expressions of opinion by learned societies have been, and are likely to be, without effect.

We have advocated the preparation of an unpolished rice—that is, a rice from which the husk and the pericarp have been removed, and which shall yield not less than 0·4 per cent. of phosphorus pentoxide. At Highet's suggestion such a rice has been produced in Siam, but in the absence of a demand for it, its preparation was not continued. The Governments of the countries concerned can create such a demand by making its use compulsory in all gaols and public institutions. In the Malay Peninsula that form of unpolished rice known as parboiled rice is used in practically all such places, but the use of that rice cannot be extended among the people, and an unobjectionable palatable unpolished rice must be substituted.

A clause in Government contracts, requiring the delivery of an unpolished rice conforming to the standard, would give opportunity for observing how such a standard worked in practice and would aid in popularising a safe and wholesome foodstuff among the people. No one believes that the introduction of such a measure would be accompanied by the immediate disappearance of beri-beri, but it is the only way in which progress in its prevention seems possible, and it brings such prevention within the sphere of practical politics.

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Kuala Lumpur.

STUDIES ON GROWTH: THE INFLUENCE OF DIET ON GROWTH, NORMAL AND MALIGNANT.

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THE idea of influencing the growth of tumours by diet is not a new one. Jensen[1] pointed out in 1909 that the diet plays an important rôle in the growth of tumours, and especially in the formation of metastases. Haaland[2] has found that mice kept on a diet consisting of cotton seeds, bread, oats, and milk were less resistant to an inoculated sarcoma than mice kept on a restricted diet of bread and oats. These results were corroborated and extended by Stahr,[3] Moreschi,[4] and Medigreceanu.[5] Rous[6] has observed that mice kept on a diet of oats and rye-flour, maize, milk, and sugar in a quantity just sufficient to sustain life show a different behaviour when they are inoculated with tumours before or during this restricted diet. In the first case on animals with large tumours no effect could be noted; in the second case the growth of the tumour was slightly inhibited. These papers, however, dealt with the influence of diet as a supply of nutriment in general. Ehrlich's atreptic theory expounded in 1906 the interesting view that tumours require a specific food-supply. Thus[7] he considers that the reason why a mouse tumour fails to grow for any length of time in a rat is due to a lack of specific food-supply. The important work of Osborne and Mendel,[8] Hopkins,[9] and recently McCollum and Davis,[10] has taught us to regard the growth, besides being due to a supply of nutritive constituents in general, as due to a specific "growth substance." Early in 1913 I pointed out[11] that these results, together with the gain in our knowledge as regards the vitamines, new important constituents of our normal dietary, cannot fail to produce some effect on the investigation of cancer, and described experiments in this new direction.

Since then two references in the literature dealing experimentally with the same subject can be found. The first paper is by Sweet, Corson-White, and Saxon,[12] who have described some experiments on mice and rats on normal diet and such devoid of vitamine. The latter diet had undoubtedly an inhibiting effect in the case of mice, where the percentage of takings was decidedly smaller, the

incubation period longer, and the tumours smaller than in the case of normal diet. On the contrary, when rats were used very little effect was noted. The second part of this interesting work seems, unfortunately, to contradict the above-mentioned results. The second paper was by Hopkins,[13] which corroborates the results of the American authors. In his cases also the inhibition of the tumour growth was not a complete one. We see from these experiments that it is possible to inhibit the growth of tumours to a small extent, and a question arises whether this could not be applied for therapeutic purposes. We must state here from the beginning that this is as yet hardly possible, and the reasons for these conclusions will be discussed in this experimental paper.

I have recently found that the diet used for the inhibition of growth, which consists of caseinogen, starch, sugar, fat, and salts, produces in pigeons typical beri-beri,[14] and therefore must be regarded as devoid in vitamines. A similar diet can be obtained by using polished rice or a food sterilised in autoclaves at a high temperature. We know, however, that such a diet would unavoidably produce in man in the first case beri-beri, in the second case scurvy.

Showing the arrest of growth in a chicken fed on red (unpolished) rice. Age of chicken, 2 months.

Lately[15] I succeeded in arresting the normal growth of young chickens for the first time on a diet containing vitamines—namely, on red (unpolished) rice, a statement which will be corroborated in this paper. Here was a new hope for influencing the tumour growth without danger of producing a deficiency disease. I therefore inoculated the chickens arrested in growth with Rous's sarcoma, a very virulent chicken tumour which takes in nearly 100 per cent. The result was that the tumour grew undoubtedly more slowly, and was smaller in size than in controls on normal diet. The chickens died sooner than those not inoculated, although no metastases were found, which are very frequent in Rous's sarcoma, an observation which might, perhaps, suggest a greater avidity of the tumour for the food than that of the normal tissues. It seems, therefore, that the growth of tumours and the normal growth of young animals are, although to some extent analogous, not quite identical. The tumour seems to have a much more active metabolism, its avidity for food is greater than that of a normal tissue. These experiments must be considered as a series of orientation experiments in an endeavour to influence the tumour growth by diet. At the present time they do not admit of a practical application, but they suggest that, especially in cases of a quickly growing but not very malignant tumour, such a diet might have some slight inhibitory effect on the rate of tumour growth without producing a deficiency disease.

This work is being continued on broad lines to ascertain the influence of the various constituents of food on tissue growth.

Experiments.

In my first communication[15] on the same subject I have described some experiments on 14-day-old chickens (Plymouth rocks) in which I have arrested growth completely by means of an exclusive diet of red (unpolished) rice. The longest time it was possible to keep alive these stunted chickens was two months. A photograph (see figure) illustrates very well the size of such chickens compared with that of those on normal food. The addition of white bread to the red rice had no effect on the growth of the chickens. I hope to be able to keep the chickens with arrested growth alive for longer periods by a slight addition of some foodstuff to the diet.

Experiment I.—In my first communication the results of tumour inoculation in chickens with arrested growth were not recorded. In this experiment 84 chickens were used, which were divided into seven batches—namely:—

1. 12 chickens on red rice.
2. 12 " " " " } Inoculated after 33 days of the diet with Rous's chicken sarcoma.
3. 12 " " " " } With addition of the same sarcoma extract to the food.
4. 12 " " " " } Addition of sarcoma extract, and inoculated after 33 days of this diet with the tumour.
5. 12 " " " " } Addition of yeast to the diet, and inoculated after 33 days.
6. 10 " " Spratt's chicken food.
7. 9 " " " " " Inoculated after 33 days.

The result of the inoculation will be seen in the next table:—

Number of batch.	Number of chickens alive at the time of inoculation.	Number of birds bearing tumours.	Diameter of tumour.
2	5	1	¼ cm.
4	5	2	¼ cm.
5	7	5	1 cm.
7	9	8	3–7 cm.

In all these cases except the last no metastases were observed. From this experiment we see very clearly the effect of the addition of Rous's sarcoma and yeast to the diet of red rice, and the fact that no metastases were found must be especially emphasised.

Experiment II.—For this experiment 67 14-day old chickens (Plymouth rocks) were taken, the

initial weight of which was 60 grm., in contrast to the previous experiment, in which 80 grm. was the average. They were bred late in the season, and were much more delicate and more difficult to keep alive. The chickens were divided into four batches, one of which was inoculated with the chicken sarcoma on the ninth day of the diet, instead of the thirty-third as in the previous experiment, a time in which the stock of vitamines from the food previous to the experiment could hardly have been completely used up, a fact which accounts largely for the results obtained. The results of the second experiment are summarised in the following table:—

	Not inoculated.		Inoculated.	
Days.	Number of chickens living.	Average weight.	Number of chickens living.	Average weight.
0	24	58 grm.	24	60 grm.
4	24	59 ,,	24	62 ,,
8	24	50 ,,	24	58 ,,
12	17	53 ,,	20	52 ,,
16	11	67 ,,	4	58 ,,
20	10	60 ,,	3	57 ,,
24	5	66 ,,	2	55 ,,

In all the inoculated chickens a tumour developed, except in 4 which died early. This shows that a diet consisting of red rice for nine days previous to inoculation does not prevent the tumour taking, and the growth of the tumours does not influence the growth of the chicken. But the post-mortem examination has shown that the tumour was in all cases, except two where it reached the size of 1½ cm., extremely small, and measured only ½ cm. on the average. Here, as in the previous experiment, no metastases were observed. The death-rate of the chickens inoculated between 3–8 days was a very great contrast compared with the controls.

In another two batches the influence of the addition of phospho-tungstic filtrates from rice polishings and yeast and the influence of the isolated yeast vitamine was also studied with a view to ascertain in which fraction of these foodstuffs the growth vitamine is to be found. The results are recorded in the next table:—

Number of chickens.	Days of experiment.	Average weight.	Nature of addition.	Number of chickens.	Days of experiment.	Average weight.	Nature of addition.
9	0	58 grm.	PWS-filtr., yeast.	10	0	58 grm.	Phospho-tungstic acid filtrate from rice polishings.
9	4	56 ,,	,,	10	4	58 ,,	
9	8	59 ,,	,,	10	8	59 ,,	
9	12	55 ,,	,,	10	12	53 ,,	
9	16	55 ,,	Vitamine 2·5 mgr. daily.	8	16	58 ,,	
8	20	57 ,,	—	8	20	61 ,,	
4	42	65 ,,	—	5	24	60 ,,	

In this experiment the addition of the phospho-tungstic acid filtrates was given instead of water and the vitamine injected intramuscularly. The result obtained shows that the phospho-tungstic filtrate fraction from foodstuffs is not likely to contain the growth vitamine, and suggests that the latter substance is likely to be chemically different from the beri-beri vitamine. A slight effect was, however, observed as regards the time that one was able to keep the young birds alive.

Experiment III.—The next experiment was performed with the view to determine the influence of vitamine-free diet on the growth of Rous's sarcoma in chicken. As vitamine-free diet polished rice was chosen; the inoculation was made 16 days after the beginning of this particular diet. Of 12 animals taken for the experiment, of which 11 were alive at the time of the inoculation, 5 showed tumours ½ cm. in diameter, with the exception of one tumour which reached the size of 3 × 1½ cm. In none of these cases were metastases found.

Experiment IV.—The same experiment was repeated on a larger scale, controls being used which were fed on polished rice, with a small addition of yeast. For this experiment 15 chickens (Plymouth rocks, as in the previous experiments), age 3 months, were used and were inoculated eight days after the commencement of the particular diet. The result was the following. Of 15 chickens fed on polished cooked rice only, inoculated, none developed a tumour. In the case of addition of yeast, of 13 chickens alive at the time of the inoculation, from the same tumour as the polished rice birds, 8 developed tumours varying in size from 1 cm. to 3 cm. without showing traces of metastases. Experiments on rats inoculated with Jensen's sarcoma showed that a similar diet had identically the same effects as was observed in fowls inoculated with the Rous sarcoma.

This whole experiment shows undoubtedly the great influence of vitamine-free and vitamine-containing diet on the growth of Rous's sarcoma.

Experiment V.—The experiments of Murphy and Rous[16] and Murphy[17] have shown that it is possible to implant Rous's sarcoma into eggs containing chicken embryos and also in the eggs of pigeons and ducks. This shows that either the egg of any species is able to nourish the tumour, or that the embryo has not acquired yet the power of resistance to implanted tumours of foreign species. It was thought that one-day old pigeons, having perhaps a store of embryonic substances, would be susceptible to Rous's sarcoma. Sixteen one-day old pigeons bred in the institute were inoculated with Rous's tumour on the second day after their leaving the shell; none, however, have as yet developed a growth. The experiment is being continued.

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A SIMPLE AND SUCCESSFUL MEASURE FOR THE PERFORATION OF A GASTRIC OR DUODENAL ULCER.

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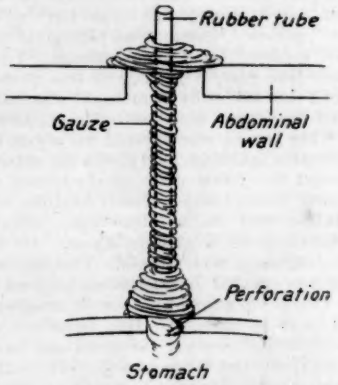
ABOUT a year ago, in a paper contributed to the Surgical Section of the Royal Society of Medicine upon the results of operation for the perforation of a gastric or duodenal ulcer and published in THE LANCET,[1] I mentioned a method of dealing with perforation by tamponade. This can be done without any time being spent in attempting to close the perforation by suture. The method is of easy application and can quickly and simply be used by those less experienced in surgery, a very important point nowadays, as so many men practise the art of surgery. Thus it is within easy attainment of the comparatively inexperienced surgeon attached to a minor provincial hospital. Most medical men may be suddenly called upon to operate for the perforation of a gastric ulcer, as, with the cussedness of things in general, the perforations will not occur when a skilled surgeon is about. It is wrong to await the arrival of such a man and so jeopardise the patient's chance of recovery. Last year (1912) a great example of this passed through my hands, an experience which a long journey back to town compelled me to dwell upon, so fixing it in my memory.

One morning I received a warning from Boston in Lincolnshire to hold myself in readiness to depart on a sudden journey there. Later in the day I was asked to come, and arrived in the late afternoon. The patient was a young man, recently married, who had suffered from his "stomach" for some years. About four years ago a gastro-enterostomy had been done by Sir Berkeley Moynihan, of Leeds. This had relieved him for a time. Then came a sudden attack of pain and great collapse. I saw him within 24 hours of the perforation. The abdomen was tightly distended with extravasated gas. There was no liver or any other abdominal dulness. To be short, there was no doubt of the diagnosis. But no operation was allowed by the friends until the surgeon arrived from London. When I arrived the poor man scarcely had any pulse at the wrist. Still, within 24 hours of the perforation so young a man could not be allowed to die without an effort being made to prevent it. So a hurried operation was done whilst the patient was infused with saline. It seems almost needless to add that the patient died after rallying for a time.

After the operation one of the medical men who were so kind as to have assisted me said, "Were not the patient's chances of life lessened by the delay in operation? Would not a less perfect operation which was not delayed be preferable to a more perfect but delayed operation?" Undoubtedly the delay had greatly lessened the patient's chances of recovery. And I must answer the second question by showing that a comparatively simple operation, well within the powers of most to do, is all that is necessary to enable such a patient to live. Also I must thank my professional colleague for his courtesy for referring to my work as a "more perfect but delayed operation." Indeed, I hope to show in this paper that there is no need to use the adjectives "less" and "more" perfect in connexion with an operation for the perforation of a gastric ulcer.

Such an operation must be carried out quickly, and should be shortly described. 1. Open the abdomen below the umbilicus. Examine the appendix and the pelvic viscera. Place a gauze packing in each loin and in the pelvis and leave them there. Free gas may or may not be seen, but odourless greenish-yellow fluid always is. 2. Open the abdomen above the umbilicus—e.g., through the inner part of the right rectus. Find the perforation, mop out any extravasation above and below the liver or round the spleen. Place one end of a gauze "plug" in the perforation to "cork it." Pack a layer or two of gauze plug over the ulcer and wind the rest round a rubber tube which leads out of the wound. (See figure.) 3. Partially close



Diagrammatic representation of the tamponade of a gastric perforation. This method is applicable to any perforation.

wounds after removing the gauze (draining the pelvis if there is much extravasation).

In the convalescence do not withhold morphia, but do not use it heedlessly. At first withhold liquids by mouth except water in ounce doses. It will wash the interior of the stomach. A patient on "rectal saline" is in no great want of food by mouth. In 48 hours the drains or "plugs" are removed under an anæsthetic and replaced in part. A gastro-enterostomy is not often needed, and no time is wasted in closing the perforation by suture. So frequently is the tissue round an ulcer too soft to hold stitches that, unless the ulcer can be excised, it is better not to attempt to close the perforation. It is very doubtful how long such stitching lasts, and though apparently secure at the operation it may be loose ten minutes after. Therefore there should always be a drain to the site of the perforation. Indeed, it might be said that the success which has followed the (apparent) suture of a perforation has probably more often been due to the gauze drain than to the suture. So that even better results may be expected when time is no longer wasted in "suturing" the perforation.

In my communication I mentioned that this proceeding had been done many times. Since that date I have done it several times more, proving again its

[1] THE LANCET, March 1st, 1913, p. 600.

efficiency. Two instances only will I quote, because they impressed themselves on me by being done in one night and because they bear on the theoretical suggestion that the non-suture of a perforation must lead to the formation of a gastric fistula. This I may say hardly ever occurs, and when it does is only temporary.

One Sunday afternoon I was called to see a lady whose medical adviser, Dr. Ross, had diagnosed the perforation of a gastric ulcer. When I saw her there was nothing except a history of "neuralgic dyspepsia" and tenderness in the epigastric region to suggest that the abdominal calamity originated in the upper abdomen. All the physical signs—distension, rigidity, dulness, immobility, &c.—were in the lower abdomen. On opening the peritoneal cavity nothing of note was found in the lower abdomen. Nothing being found, the upper abdomen was opened, and a perforation found near the lesser curvature on the anterior wall of the stomach. The perforation was large, surrounded by a sodden area of inflamed tissue, and much fluid was issuing from it. The perforation was tamponed in the way described above. Forty-eight hours after the operation the "gastric" gauze was changed, when gas and fluid escaped from the stomach. The issuing fluid smelt like gastric juice, and was more copious when fluid was taken by mouth. It was only mildly septic and interfered little with the healing of the wound. This fistula was present for about ten days, when it healed spontaneously. On my return home, as I opened the front door of my house the telephone rang from Colney Hatch Asylum, where Dr. S. J. Gilfillan told me a nurse was suffering from the perforation of a gastric ulcer. In her case, also, the diagnosis was simple. The operation was also, and was carried out substantially as narrated above. The perforation was much smaller than in the lady just mentioned. Her recovery was very prompt. Her indigestion vanished and her general health has improved very greatly. In neither case was a gastro-enterostomy necessary at the time or has proved to be so later. Indeed, I suspect that in the absence of (narrowing the stomach by) suture, a gastro-enterostomy is less often required than if the perforation is sutured.

These two reported instances are specially selected only because they happened to take place on the same night, and by preventing my getting to bed stamped themselves on my memory as possible examples of results of tamponading the ulcer. Its advantages I will briefly summarise. 1. The operation is simpler for the operator to do. 2. The operation is quicker, particularly in less experienced hands. 3. In consequence of being simpler and quicker, the patient more easily gets over it—that is to say, the mortality is lower. It certainly is so amongst my own figures. 4. A gastro-enterostomy, primary (at the time of the operation for the perforation) or secondary (at a later period), appears to be less frequently required. 5. Complications—e.g., pelvic abscess, subdiaphragmatic abscess, &c.—are in my experience less frequent. Fears of more than a temporary and brief gastric fistula may be dismissed.

If such a summary is in its turn summarised it may be said that such an operation offers the patient more chance of recovery, particularly in the hands of an operator of no great experience. Of course, in the hands of experienced and facile operators the excision of the ulcer, followed by suture of the wound, and perhaps gastro-enterostomy, may be better and result in the recovery of the patient. But for more ordinary patients, surgeons, and circumstances the method of tamponade is better.

Harley-street, W.

NOTE ON THE TREATMENT OF SCIATICA.

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IN view of the great and, I believe, increasing prevalence of sciatica, and the often comparatively poor results obtained from treatment by rest, injections of various kinds, and internal medicine, I think it may be of interest to report the results attained by me during the past year by physical measures—namely, by the use of the 500 candle-power lamp and static electricity. Nine cases have been treated by these methods, eight of which made a complete recovery, but only six of them deserve special mention, as the other three were early acute cases, and the probability is that they would have recovered promptly with rest, drugs, ionisation, or other treatment.

The short history of the six cases is as follows:—

CASE 1.—The patient, aged 53, had lumbago some four weeks previously, but this had got better. He now had cramp in calf and thigh muscles, and severe pain on certain unguarded movements ran down the back of the thigh and was worst at the knee. Knee-jerks present. A patch of anæsthesia, described by him as a "dead patch," on the outer and lower part of the leg, down to the ankle. This patient showed improvement after two or three treatments, but was slow in making a complete recovery. The interesting point was that the "dead patch," which he had had for years, apparently completely recovered.

CASE 2.—The patient, aged 53, who was referred to me for electrical treatment by Dr. T. J. Horder, had had sciatica for two years; had been treated by ionisation, been to the Riviera and Harrogate, &c. Was never very bad, but only exceptionally free from pain for a whole day. He improved very much at first, and then seemed to stick, and just as I was about to despair he recovered completely. This patient was taking medicine as well as having the treatment given by me.

CASE 3.—The patient, aged 64, had sciatica 18 months ago. He went to Vernet-les-Bains and was cured; returned to England and was exposed to cold, with the result that his sciatica returned 13 months ago. The pain was not severe, but always bothered him when he got up in the morning. Slight tenderness over the sciatic nerve between the great trochanter and tuberosity. This patient showed no improvement whatever. His pains became less marked in the region of his sciatic nerve, and increased in the lumbar region and in the anterior part of the thigh. I took a skiagram of the hip-joint, and as there was some evidence of osteo-arthritis in the joint I thought it of little use to continue the treatment. I understand that now, six months later, he still has the pain.

CASE 4.—The patient, aged 57, who was referred to me for electrical treatment by Dr. H. W. McClure, had had sciatica for three months; at first very severe pain night and day; now very severe at times, but not continuous. Always worse at night so that sleep was prevented. There were marked wasting and fibrillary contractions of the muscles of the thigh, less wasting of the calf. Knee-jerks equal. Tender point situated over the sacro-sciatic notch, the internal popliteal, and in the outer side of the calf. Could walk only with the aid of two sticks. After three treatments this patient was having good nights, and after 18 treatments was completely cured.

CASE 5.—The patient, who had had two bad attacks of sciatica lasting for months, came to me complaining of lumbago, but next day said he had cramps in the calves of his legs, and that his previous attack of sciatica had begun in the same way. There was a definite tender point

over the left sciatic notch. Treatment was applied here, and also on the right side. After 12 treatments he was able to attend two shoots without apparent damage or relapse.

CASE 6.—The patient, aged 32, three weeks ago with a friend was lifting a heavy weight; the latter let go and the whole weight coming on the patient he strained his back. He had pain in the back for a few days, and this was followed by such severe pain in the sacro-iliac joint that he could not turn in bed, and could get no sleep for five nights. Now he has pain down the outer side of the thigh and calf, and pain in the dorsum of the foot. He could not bend the hip-joint with the knee-joint extended. There was a definite tender point just at the gluteus margin over the sciatic nerve. The patient had a good night after the first treatment, and now after 10 treatments is practically well except for the stiffness.

I should add that all these patients went about their ordinary avocations, as far as they were able to do so, while the treatment was going on. I do not discourage a moderate amount of walking, nor do I object to attention to business. What I do find detrimental to most people is travelling by train or motor car.

The method adopted is as follows. First it is necessary to find the definite tender point or points in the line of the sciatic nerve. These can be found (1) by direction of the patient, (2) by pressure, (3) by the use of the vibrator, and last and best by the use of the static spark; but this latter, if attempted at the first consultation, may unfavourably impress a timid patient.

Having found the tender point, the parts around it are exposed for 20 minutes to the rays of the 500 candle-power light; this is applied as close to the bare skin as the patient can stand the heat, and by turning away the light for a moment, or by passing the hand lightly over the skin a considerable degree of tolerance can be established. The obvious effect is hyperæmia. After 20 minutes' exposure to the light the patient is seated on a chair on the insulated platform. An electrode of some easily moulded metal—I use pewter—is applied over the tender spot, usually about half way between the great trochanter and the tuberosity of the ischium, or over the sacro-sciatic notch. The size of the electrode I generally use is 3½ by 4½ inches, but if the part is very tender a larger electrode will be better borne.

An adequate static machine should be capable of giving a 12-inch spark in all weathers between the terminal balls of the prime conductors when the patient is connected to the machine, and this spark should be capable of regulation down to ½ inch, or less for particularly tender points. With the electrode applied to the patient's skin and connected by a wire to the positive side of the static machine, the negative side being grounded and the spark gap closed, the motor is now started and the spark gap gradually opened, keeping the number of sparks passing at the gap at not more than 300 a minute at the outside, while 200 a minute is even better.

The operator will not have opened the spark gap very far, in all probability, before the patient will complain of pain. When this point is reached the spark gap is closed again until the patient says he feels just a little tenderness, and at this point it is kept for five minutes or so, when the spark gap can again be widened, this time with probably less discomfort to the patient. The treatment by the static wave current is kept up for 20 minutes, or less if the patient shows signs of fatigue. I then go on, if I deem it advisable, to give a few static sparks to the muscles of the buttocks and thigh, to any tender points in the course of the nerve, and to a tender patch probably due to fibrositis, which I often find in the gluteal or lumbar region in these cases.

These sparks are given with the patient standing on the insulated platform, which is connected to the negative side of the machine, the positive side being grounded. A ball electrode held in the hand of the operator and also grounded is approached to within 4 or 5 inches of the spot to which the spark is to be applied. The patient feels a smart blow or cut as with a light whip, and is not apt to appreciate the treatment at first, but after experiencing the relief these sparks bring will often ask to have them repeated and point out the spot where they should be applied.

This ends the treatment, which should be applied daily at first until marked improvement is obtained, when a treatment can be given twice weekly, bi-weekly, and finally stopped. This treatment is equally successful in neuritis of the arm, or in uncomplicated neuritis anywhere when a definite tender point can be found.

As to the rationale of the treatment it is probable that the light causes hyperæmia of tissues deeper than the skin. This hyperæmia followed by the deep massage effect of the static wave current would remove and carry off in the blood current the plastic exudate which is probably thrown out around the nerve in sciatica. The same forces would act in the same way in removing patches of fibrositis.

In addition to this, however, it has been shown that the static wave current increases the hæmoglobin contents of the red corpuscles and increases the elimination of solids in the urine. While I cannot say that I have myself made the necessary observations to confirm these statements, the condition of improved health and vitality in patients who are taking this treatment is so obvious, and so frequently pointed out by them with every evidence of satisfaction, that I cannot feel any doubt but that, in addition to the local effects, general metabolic effects of a beneficial character are taking place in the organism.

Welbeck-street, W.

TWO CASES OF POST-OPERATIVE HEMIPLEGIA.

BY A. WEBB JONES, M.D. LOND., F.R.C.S. ENG.,
SURGEON AND GYNÆCOLOGIST, GOVERNMENT HOSPITAL, ALEXANDRIA.

HEMIPLEGIA as a post-operative complication must be so rare that the following two cases which occurred in my practice almost within the same week seem to merit reporting. Both were patients at the Government Hospital, Alexandria.

CASE 1.—The patient was an Egyptian woman, aged 40, suffering from a large fibroid of the uterus. Operation was performed on Sept. 15th, 1913, in the raised pelvis position. The tumour involved the supravaginal cervix, which was greatly expanded, and was associated with a tubo-ovarian abscess on the right side. The operation was extremely difficult and lasted almost two hours. A gauze drain was left in for 48 hours. The wound healed without suppuration, but for the first week following operation the temperature was slightly raised, ranging from 37·6° C. (evening) to 37·2° (morning). The operation was done at 9 A.M. At 5 P.M. the patient complained of pain in the right arm and leg, which by the next morning had given place to complete loss of power and sensation. Four days later there was some return of power in the arm, whilst sensation commenced to come back on the twenty-fourth day. Recovery

from the paralysis in the arm was good and rapid. Improvement in the lower limb was much slower and less complete, but she left hospital on Oct. 29th walking fairly well with the aid of a stick.

CASE 2.—The patient was an old woman with a large ovarian cyst almost filling the abdomen. The cyst wall had ruptured, setting free a large quantity of colloid material into the general peritoneal cavity. The tumour had evidently undergone malignant changes, and masses like boiled sago had infiltrated the uterus and pouch of Douglas. The cyst was removed on Sept. 22nd, 1913. The operation was simple and lasted less than an hour; there was no shock. The Trendelenburg position was not employed. The operation was performed at 9 A.M. On the following morning she was noticed to have right hemiplegia (including the face) with aphasia. Coma with difficulty in swallowing appeared on the next day, and death took place on the morning of the 26th. On the evening of the 25th the temperature, which had up to that point remained normal, rose to 37·7° C.

Post mortem the entire left cerebral hemisphere showed white softening; there were no signs of hæmorrhage. The aorta above the valve cusps presented slight atheromatous changes. There was no sign of sepsis in the peritoneum.

The occurrence of two such rare accidents so near each other at first suggested there must be some cause common to the conditions under which both operations were done. Beyond the fact, however, that the temperature in the theatre was extremely high and the humidity great, there was no striking peculiarity that I am aware of. Much the same conditions occur every August and September in Alexandria, and besides, on one of the intervening days (Sept. 18th) an ovariotomy for dermoid cyst with twisted pedicle was done by the same *personnel* and followed a normal course.

As regards the cause of the hemiplegia, one naturally first thought of the three common possibilities: hæmorrhage, thrombosis, and embolism. There appears to me to be no special reason why cerebral hæmorrhage should occur *after* operation, although one can imagine that at the time of operation the Trendelenburg position or vomiting might favour such an event. The post-mortem findings, too, in Case 2 put this out of the question. If embolism was responsible one has to imagine that a thrombus displaced from the pelvic veins either traversed the lung capillaries without producing symptoms, or else passed directly to the brain *vid* a patent foramen ovale or ductus arteriosus. At the necropsy the foramen ovale was not noticed to be patent, but unfortunately the hospital pathologist was not present, and my own attention was not especially directed to that point.

Schenk read a very complete paper on Thrombosis and Embolism following Operation at the American Gynæcological Society in 1913, and the subject was also touched on in the recent discussion on Bland-Sutton's paper on the Visceral Complications in Hysterectomy for Fibroids at the Medical Society of London.[1] One fact appears from the study of these papers, and that is that thrombosis and pulmonary embolism are markedly more common after myoma than after other pelvic operations. Thus, in laparotomies for pelvic conditions of all kinds thrombosis occurs in 2·28 per cent., whereas after myoma operations the percentage rises to 3·7, or even 5 per cent.

With regard to certain theories that have been put forward, it may be mentioned that in both my cases the abdominal wounds were sutured in layers. In the hysterectomy case the retraction of the abdominal walls was vigorous, in the ovariotomy case slight or not at all. It would be out of place to go into the causation of post-operative thrombosis in general, but it appears to me that the anæmic condition of most cases of fibroids may be a predisposing factor, and, furthermore, if slowing of the blood stream be accepted as one of the causes, may not the modern fashion of adopting a semi-recumbent or sitting-up posture increase the tendency in the same direction?

Alexandria.

[1] THE LANCET, Nov. 1st, 1913, pp. 1249, 1256.

SECONDARY HÆMORRHAGE FROM DEEP EPIGASTRIC ARTERY AFTER OPERATIONS FOR APPENDIX ABSCESS.

BY J. O. SKEVINGTON, F.R.C.S. ENG.,
SURGEON TO KING EDWARD VII. HOSPITAL FOR WINDSOR.

I AM not aware that attention has been called to this most serious happening.

On May 15th, 1913, I was called in by Dr. H. E. Giffard, of Egham, to operate on a boy, aged 16, suffering from a large appendix abscess. A secondary operation was required to open a collection of pus per rectum a week later. The boy was making good progress till the evening of the 25th, when I received an urgent message that he was bleeding badly. I found he had lost a large amount of blood, and it was spurting from the lower angle of the abdominal wound. This hæmorrhage was controlled by compression between the finger and thumb till chloroform could be administered. Two deep thread sutures were then passed through the whole thickness of the abdominal wall at the inner edge of the wound, and all hæmorrhage ceased. The boy made a good recovery.

The second case occurred recently and was seen in consultation with Dr. D. H. Anderson and Dr. T. E. Cottu of Maidenhead. The patient, a strong young man, aged 28, had been operated on by Dr. Cottu on Dec. 3rd, 1913, for appendix abscess, the incision being the anterior vertical one through the rectus sheath. He made excellent progress till the afternoon of the 13th, when a large amount of hæmorrhage occurred. Dr. Cottu examined the wound under an anæsthetic, and as the condition of the wound forbade any hope of direct ligature succeeded in arresting the bleeding by plugging. The patient's condition was very serious. When seen the next day in consultation this plugging was removed and there were no signs of hæmorrhage. As the whole area was in a most septic condition, it was judged advisable to keep the patient under close observation and not to disturb the parts further. On the evening of the 16th hæmorrhage again occurred and came from the deep aspect of the abdominal wall at the lower angle of the wound. Ligatures failed to hold, and two large pairs of artery forceps were left on the bleeding spot. This controlled the hæmorrhage, but in spite of transfusion the patient never rallied and died two hours later.

Conclusions.—Both operations were done by the vertical incision through the rectus sheath. In future in all cases in which this incision has to be carried somewhat low down, when the drainage-tube of necessity must lie in close proximity to the deep epigastric vessels, it is my intention to divide these vessels between ligatures when first seen. If immediate suture fails to arrest the bleeding it seems to me the obvious course is to tie the artery through a separate incision. In the first case

immediate suture sufficed. In the second case the state of the tissues and the almost moribund condition of the patient forced the expedient of leaving on the bleeding spot a pair of forceps.

Windsor.

RUPTURE OF THE HEART BY EXTERNAL VIOLENCE.

BY ALEX. MILLS KENNEDY, M.D. GLASG.,
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CONSIDERING the great frequency of injuries to the thorax, it is remarkable how seldom the heart suffers in consequence. Wounds of the heart muscle may be inflicted by instruments or bullets penetrating the thoracic wall from without, and spontaneous rupture of the heart has been described, usually associated with a pathological condition of the muscle. Injuries to valve segments have resulted in rare cases from blows upon the chest, and Bernstein and Ravenstorf in Germany have both described cases of rupture of the heart by traumatism. Rupture of the heart as the result of external violence to the chest walls is undoubtedly an event of sufficient rarity to warrant its occurrence being recorded.

The patient in the case now reported was brought into hospital in a dying condition, and only survived a few minutes. She was a sparely built, emaciated woman between 60 and 70 years of age; her scalp was almost completely replaced by old cicatricial tissue, which extended down over the forehead and cheeks, and almost wholly replaced the left auricle and closed over the external auditory meatus. No external bruising was present, and the only history obtainable was that of having been knocked down by a cart, one shaft of which had probably struck her in the right mammary region. Possibly an hour had elapsed from the time of the accident till her death in the reception room of the hospital.

A necropsy was made 48 hours later, and the following report summarises the conditions found.

Thorax.—The second, third, fourth, fifth, and sixth ribs of the right side were fractured, each about ½–¾ inch from the costo-chondral junctions. The anterior fragments of the third and fourth right ribs were driven inwards into the thoracic cavity for a distance of about ½ inch, but the costal pleura over their ends was not ruptured. There was some hæmorrhage into the subpleural tissues over the sites of these fractures. The fourth right costal cartilage was fractured through its junction with the sternum. From the lower border of this latter fracture another fracture arose which passed across the sternum to terminate at the upper edge of the fourth left costal cartilage. There was no tearing of the tissues in the immediate neighbourhood of this sternal fracture. The sixth left rib was fractured at a point 1½ inches from its costo-chondral junction; the costal pleura was thereby torn, and there was a little hæmorrhage into the subpleural tissues in the immediate neighbourhood.

Pericardium.—About 10 ounces of fluid blood were present in the pericardial sac, but the pericardium was otherwise healthy.

Heart.—There was slight general dilatation of the heart, and the cardiac muscle was pale and soft. A microscopical examination of the cardiac muscle revealed some brown atrophy of the muscle fibres, but this could not be considered more excessive than one would expect in an individual of this age. No valvular lesions were present, and the coronary arteries were healthy. Patches of atheroma were present throughout the aorta. In the anterior wall of the left ventricle there were two ruptures, half an inch apart, extending across the wall parallel to one another in a horizontal and downward direction from the middle line outwards. The edges of these wounds were somewhat irregular and ragged.

The *upper wound* measured 1½ inches long on its epicardial surface, and extended right through the wall of the left ventricle and caused some tearing of two branches of the anterior papillary muscle. Its endocardial orifice measured only about ¾ inch. The inner end of this wound was situated ½ inch to the left of the interventricular groove and 1 inch below the auriculo-ventricular groove; its outer (or left) end was 1½ inches below the auriculo-ventricular groove and reached to within ½ inch of the left border of the heart. The *lower wound*, lying ½ inch below the upper, was ½ inch long and extended to a depth of only ⅛ inch. Its inner end was about the same distance from the interventricular groove as that of the upper wound. Above the upper wound, extending up to the auriculo-ventricular groove, there were some patches of hæmorrhage under the epicardium, and there was also hæmorrhage into the tissues of the superior mediastinum around the origins of the great vessels from the aorta. There were no other injuries present anywhere.

The *lungs* showed emphysema and some old cicatrisation at both apices with a few adhesions. The *spleen* was slightly enlarged and soft, and the *kidneys* granular, but none of the other organs showed anything of note.

The case presents several features worthy of remark. There can be little doubt that the blow on the chest was delivered with considerable violence, yet there was no bruising visible externally. The chest wall was freely mobile and the transverse fracture of the sternum corresponded in level more or less closely with the rupture of the wall of the left ventricle, yet the parietal pericardium was intact, and there was no tearing of the tissues in the immediate neighbourhood of this fracture. There was no gross disease of the coronary arteries or of the cardiac muscle, and the brown atrophy made out microscopically in the fibres of the latter was probably normal for a person of such years. Considering these facts along with the characters of the wound—the irregular and ragged edges—and the tearing of two branches of the anterior papillary muscle, it seems reasonable to assume that the mechanism of the lesion was rupture by bursting.

Glasgow.

CENTENARIANS.—There are at least four centenarians living in Surrey, according to the *Surrey Advertiser*—Mrs. Stovold, of Elstead, and Mrs. Ann Peters, of Great Bookham, who have just celebrated their hundredth Christmas; Mr. John Durant, of Weybridge, who attains his 104th birthday on Feb. 2nd; and Mr. John Whitehead, of Wimbledon, who is 100 years of age. Mrs. Rose Wood, of Chertsey, died on Dec. 31st last. She would have completed her 103rd year had she lived till March next. Miss Emma Elkins, who in July last entered upon her 101st year, died recently at Prestbury, Gloucestershire.

Medical Societies.

LIVERPOOL MEDICAL INSTITUTION.

Hypermetropic Astigmatism.—Sclero-corneal Trephining for Glaucoma.—New Operation for Treatment of Salpingitis. —Some Factors in the Spread of Typhoid Fever.

A MEETING of this society was held on Dec. 18th, 1913, Mr. ROBERT JONES, the President, being in the chair.

Dr. R. E. HARCOURT related the case of a youth, aged 19, in whom Hypermetropic Astigmatism was present, with hystero-epileptic fits and headaches over a period of six weeks. Rest in bed caused the fits almost to cease, and correction of the refractive error resulted in complete cessation of fits and headaches.—DR. H. ARMSTRONG mentioned the case of a child, aged 4, in whom homicidal mania was present along with hypermetropia and squint. In this case correction of vision had also resulted in complete disappearance of all mental symptoms.

Dr. A. NIMMO WALKER read a note on Further Experiences of Sclero-corneal Trephining for Glaucoma. He described three important modifications of the operation originally performed by Lieutenant-Colonel R. H. Elliot; the flap was altered in shape, being made a small segment of a large circle parallel to the limbus; the trephine hole was made further forward, and the iris was allowed to prolapse into the trephine hole, a small portion being snipped out with scissors and the prolapsed portion allowed to fall back into its place. Dr. Walker was of opinion that this operation was by far the best treatment yet discovered for glaucoma. He did not claim that it was an infallible cure for all cases, but it enabled the surgeon to advise an operation which had a good chance of arresting the disease without causing mutilation of the eye or damage to the sight. A patient was shown on both of whose eyes the trephining had been performed.—Mr. R. J. HAMILTON had seen two cases where the drainage had not continued after the trephining and iridectomy had then been done. He had had good results in other cases.—Mr. HUGH E. JONES had found iridectomy satisfactory, but considered that in some cases tension was kept down better by trephining.—Dr. EDGAR STEVENSON considered that the introduction of the trephining operation was the most important step forward in ophthalmology since von Graefe introduced iridectomy. The operation was all British.

Dr. W. BLAIR BELL described a New Operation for the Treatment of Severe Salpingitis in Young Women. As the internal secretions of the ovary and the menstrual function were important in the general condition of young subjects he did not in them approve of complete removal of the tubes, ovaries, and uterus. By taking a wedge-shaped portion of the fundus along with one ovary and both tubes he removed the diseased structures, and left enough to be of use to the patients.

Dr. C. O. STALLYBRASS read a paper on Some Factors in the Spread of Typhoid Fever. He showed by large charts that the great fall from 1300 cases in 1895 to 124 in 1912 was coincident with the fall in the number of courts and alleys in the city. The greater facilities for the isolation of the sick, the supervision of the milk-supply and that of other foodstuffs, and the removal of fly-breeding refuse had also contributed. Many cases were imported, mainly sea-borne, and these might be the source of small local outbreaks, especially where one of the patients was a chronic carrier. Dr. Stallybrass had found shell-fish cases to be due mostly to mussels from Ireland. Oysters had not for some time given rise to typhoid fever so far as was known. In his opinion typhoid fever was chiefly spread by direct contact, fingers of a patient or his attendants being soiled by excreta, and in many cases food prepared by the soiled hands led to spread of the disease. He thought it possible that flies might carry germs to food and so cause infection. It might yet be proved that biting insects also spread the disease.—Dr. E. W. HOPE said that Dr. Stallybrass's careful work proved and confirmed the views of the causation of typhoid fever. It had been suggested that the disease was decreasing because the population was acquiring immunity, but the facts presented proved this was not the case; 65 per cent. of notified cases had had their origin determined accurately.

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held at the Royal Devon and Exeter Hospital on Dec. 12th, 1913, Mr. Russell Coombe, in the absence of the President, being in the chair. —Dr. Ransom Pickard and Mr. G. L. Thornton showed a case of Third Cranial Nerve Paralysis with some unusual points of interest. The patient, a married woman aged 46, was suddenly seized with severe pain in the head and back on the evening of Dec. 19th, 1912. Mr. Thornton was called in shortly after the onset. The patient had vomited and had felt as if her whole body was in a vice, but the pain was now most severe at the vertex. She had taken a dose of castor oil which might possibly have accounted for the vomiting. The temperature and pulse were within normal limits, and a routine examination failed to reveal any definite cause for the pain. A freely movable right kidney was noted and a Dietl's crisis was queried. The family and personal histories were unimportant, the only point to note being a chronic nasal catarrh of the left nostril and a deflected septum to that side, for which she had been treated. On the following day the headache was relieved, although it had not entirely disappeared, but the pain now was chiefly referred to the lower sacral region, and she could not sit long in one position. This pain became aggravated on Christmas Eve, and when playing cards she noticed for the first time that the figures ran together and she also saw double. By 10 P.M. the left eyelid had completely dropped. When called to see her on Dec. 26th there was found to be complete paralysis of the left third nerve. The temperature and pulse were normal. There was no reflex alteration or abnormality other than that related directly to the affected nerve. The patient's subjective symptoms were pain in the back, of lumbago nature, and some stiffness. The case was watched carefully for some days, the patient being kept in bed. No rise of temperature was noted, and the pain in the back gradually abated, and but for the eye symptoms the patient was in her usual good health in three weeks from the onset of the illness. Total paralysis of the nerve persisted until May, when slight raising of the lid was first noticed, and from this time onwards gradual progress was made as regards the movements of the muscles involved. Improvement during the last three months had been almost at a standstill. The fundi oculi had been found normal throughout. The points of interest were chiefly centred in the diagnosis. The onset suggested an acute infection, but the absence of pyrexia was certainly unusual. Polypi in addition to the nasal discharge had been noted in the left nostril and the possibility of nasal infection could not be ignored, although it was difficult to understand how the accompanying nerves should have escaped when considering a sphenoidal sinus infection. In the same way hæmorrhage was unlikely. Other suggestions had included a rheumatic origin comparable with that in Bell's palsy. The pain in the back could not be ignored, although the symptoms present were not sufficient to warrant a diagnosis of meningitis. Specific disease could be disposed of entirely, as apart from the extreme improbability the Wassermann test had been found negative by a competent authority. The treatment adopted had been salicylate with hydrargyri perchloridum and iodide, and later strychnine. Locally galvanism had been applied to the lid and directly to the eyeball, as suggested by Dr. Risien Russell.—In the discussion which followed Dr. W. Gordon pointed out the necessity for a guarded opinion when these cases were seen at an early stage. The possibility of disseminated sclerosis should be borne in mind. As regards the case in question, a rheumatic origin appeared to be the most likely diagnosis.—Mr. R. A. Worthington asked if the nasal discharge had been purulent in character and whether investigations had been made with regard to the condition of the sphenoidal sinus.—Dr. Gordon read a paper on the Value of the Cardiac Sign in Cancer—50 consecutive cases with 8 per cent. of error.—Dr. R. V. Solly, in discussing the paper, pointed out the unreliability of the presence of Foule's cells in the peritoneal exudate.—Mr. Worthington said there were three points of view in considering changes in cardiac dulness—(1) heart's diminished size; (2) emphysema; and (3) dislocation of the heart. The pericardium may become laxer under certain conditions, and the attachments of the heart in like case loosened. It was possible to his mind that the sign was due to slackening of the pericardium and to some extent relative to advancing age—

a component factor in loosening of ligaments and in the incidence of cancer.—Dr. F. A. Roper thought that more thorough investigations should be made of gastric contents in suspected cases of cancer. He also alluded to the alkalinity of the blood test and to Salmon's test for total free nitrogen in the stomach contents.—Dr. Gordon replied. —Mr. C. E W. Bell showed a Pregnant Uterus which he had removed owing to complications related to the presence of a large fibro-myoma.—Dr. J. D. Harris exhibited X Ray Negatives as viewed with the radioscope.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held in Manchester on Dec. 19th, 1913, Dr. W. E. Fothergill, the President, being in the chair.—Dr. A. Donald (Manchester) showed a specimen of Endothelioma of the Cervix occurring in a woman aged 25, removed by abdominal panhysterectomy.—Dr. W. Blair Bell (Liverpool) showed a specimen of an Unusual Malformation of the Uterus. This uterus was apparently normal except for a small left horn to which were attached the round and ovarian ligaments. Dr. Bell also showed a specimen of an Ampullary Pregnancy on the point of rupture.—Dr. H. Clifford (Manchester) reported a case of Concealed Accidental Hæmorrhage accompanied by hæmorrhage into the peritoneal cavity apparently due to rupture of vessels in the right broad ligament following the great and acute distension of the uterus. The patient was admitted to hospital in a very serious condition, and after a short rest it was decided to open the abdomen and remove the uterus. This was rapidly done and for a short time the patient rallied, but eventually died six hours after the operation. The urine was loaded with albumin.—Dr. H. Leith Murray (Liverpool) and Mr. R. M. Littler (Southport) recorded a case of Adeno-chondrosarcoma of the Endometrium occurring in an unmarried woman aged 46. Microscopical examination of a polypus suddenly extruded from the cervix rendered the diagnosis easy and a wide hysterectomy was done. Regular glands, sarcoma spindles, islands of hyaline cartilage, and possibly fat cells were present. There was no invasion of the cervix, the muscularis of the body, or the appendages.

BRISTOL MEDICO-CHIRURGICAL SOCIETY. — A meeting of this society was held on Dec. 10th, 1913, Dr. P. Watson-Williams being in the chair.—Mr. H. Elwin Harris showed a child with Chronic Tertiary Ulceration of the Scalp. —Dr. J. O. Symes showed a patient with Multiple Swellings in and on the Tibia and other Bones, with a proteid body in the urine. The patient was improving with antispecific treatment, and the Wassermann reaction was positive.—Dr. E. C. Williams stated that an infant, aged 5 months, with a Gumma of the Femur, which he was to have shown, had died 41 days after an injection (intramuscular) of 0·05 gm. of neosalvarsan.—Dr. Carey F. Coombs, in showing a case of Associated Tabes Dorsalis and Aortic Regurgitation, remarked that this was the not uncommon "Babinski" syndrome, and that syphilis was probably the cause of aortic disease in 75 per cent. of cases.—Dr. Bertram M. H. Rogers showed an infant, 2½ months old, in whom all symptoms had cleared up and the child put on weight after an intramuscular injection of 0·05 gm. of neosalvarsan.—Dr. Watson-Williams showed patients illustrating typical tertiary syphilitic lesions of the nose, pharynx, and larynx.—Professor J. Michell Clarke showed a case of Associated Congenital Syphilis and Graves's Disease, and said that he regarded the simultaneous occurrence as accidental. —Dr. J. R. Charles showed a case in which there were symptoms of tabes in association with plumbism and a positive reaction might possibly be due to the lead.—Dr. J. R. Kay-Mouat among other specimens showed one of the site of injection of salvarsan 19 days after injection. The tissues showed the presence of arsenic in the centre with a surrounding area of hyperæmia and leucocytic infiltration.

THE ASSOCIATION OF ASSISTANT MEDICAL OFFICERS OF ASYLUMS IN ENGLAND AND WALES.—The following office-bearers in this newly formed association have been elected:—Chairman: E. L. Dunn, Berkshire Asylum, Wallingford. Honorary treasurer: W. Maule Smith, 2, Victoria-road, Bromsgrove. Honorary secretary: F. J. Stuart, Berry Wood, Northampton.

Reviews and Notices of Books.

Researches on Rheumatism.

By F. J. POYNTON, M.D. Lond., F.R.C.P. Lond., Senior Physician to Out-patients at University College Hospital, London, and at the Hospital for Sick Children, Great Ormond-street; Physician in Charge of the Children's Ward, University College Hospital; and ALEXANDER PAINE, M.D. Lond., D.P.H., Director of the Cancer Hospital Research Institute, London. London: J. and A. Churchill. 1913. Pp. 461. Price 15*s*.

IN this volume Dr. F. J. Poynton and Dr. Alexander Paine have collected together the chief papers bearing upon a research on the subject of rheumatism with which they have been occupied for a period of 15 years. The results obtained by these two observers are well known, and as their published writings are scattered through the medical press for many years, the authors have performed good service in bringing them into one volume.

The greater part of the book is concerned with the details of the acute rheumatism of childhood, this condition being chosen because it is frequent in its occurrence and also not uncommonly fatal, and thus clinical, pathological, and histological facts can be obtained. As is well known, Dr. Poynton and Dr. Paine maintain that acute rheumatism is a specific disease caused by a definite micro-organism. Their views have met with a considerable amount of criticism owing to the negative results that have been obtained by some bacteriologists; but, on the other hand, they have been corroborated by others. One great difficulty has been to define the condition acute rheumatism, for unfortunately numerous disorders are covered by the all-embracing term "rheumatism." The authors, however, save themselves from falling into the trap of believing that everything met with showing the least resemblance to acute rheumatism is in reality of that nature.

The work is divided into three parts. Part I. contains papers published between 1898 and 1900, previous to the demonstration of the diplococcus, which Dr. Poynton and Dr. Paine now look upon as the causal organism of acute rheumatism. In Part II. the papers deal with the demonstration of the bacterial cause of acute rheumatism, the nature of the rheumatic processes in man and animals, the bearing of the results obtained upon conditions allied to the rheumatic, together with some investigations into such conditions. This group is subdivided into a group dealing with the cardinal steps in the demonstration of the etiology and into others dealing with arthritis, chorea and other nervous manifestations, and with heart disease. The last of these groups contains the practical applications of the investigation to clinical medicine and public health. Part III. consists of a study of acute rheumatism based upon the results of the previous researches, and has not been published before. It forms a valuable summary of the present knowledge on acute rheumatism, with a brief review of the investigations which led up to the same.

In discussing the etiology the theory of infection is naturally considered, and whilst upholding the view that the disease may be looked upon as the result of infection by a diplococcus belonging to the streptococcal group, Dr. Poynton and Dr. Paine do not maintain that the causation of acute rheumatism is due entirely to the invasion of this organism. Its presence in the tissues is, they

think, essential, but there are important predisposing factors of much practical interest, amongst which may be mentioned heredity and age incidence. Further, they say that in general those surroundings which are associated with poverty and neglect are responsible for much of the acute rheumatism so rife in this country.

A brief account is given of the chief characteristics of the diplococcus rheumaticus. The morbid anatomy is then considered, including not only the changes in the joints and connective tissues, but also the subcutaneous nodules and the state of the respiratory system, especially the tonsils, and the opinion is expressed that unhealthy conditions of the tonsils and nasopharynx are, especially in childhood, closely associated with acute rheumatism.

In the section dealing with symptomatology two general statements are made—the first, that in the future all descriptions of acute rheumatism will be probably based upon a survey of the disease in the young, and such peculiarities as occur in adult life will be looked upon as departures from the classical disease which is seen in its truest characters in childhood; the second, that the symptoms do not always combine to produce an acute disease running a definite course. On the contrary, not only may the symptoms be at first indeterminate, but they may even occur as isolated events pointing to the implication of one important organ only. Indeed, the authors suggest, with some reason, that any description of the symptoms of acute rheumatism must be almost as formidable an undertaking as a description of tuberculosis.

The last point dwelt upon is the influence of these researches upon the all-important problem of the treatment of the disease. Amongst drugs the administration of the salicylates naturally receives most attention, and whilst admitting that these remedies relieve pain and lower temperature, the authors fail to find any proof that they have a specific action; therefore, although advocating their use for the polyarthritis, muscular pains, or headache, they do not advise pressing them for their specific action in heart disease or chorea. Stress is laid on the importance of adopting all possible measures for the prevention of the disease, such as proper clothing and care of sore throats. In conclusion, Dr. Poynton and Dr. Paine express their conviction that the general subject of "rheumatism" has reached only the threshold of inquiry, and that in every direction new fields for research and inquiry are open.

This volume will be found of unusual interest, containing as it does a large amount of instructive information, and throwing out many suggestions for future investigation. The authors may be congratulated on their patient and thorough research.

Epidemic Cerebro-spinal Meningitis.

By ABRAHAM SOPHIAN, M.D., formerly of the New York Research Laboratory. With 23 illustrations. London: Henry Kimpton. Glasgow: Alexander Stenhouse. 1913. Pp. 272. Price 12*s.* 6*d.* net.

THIS monograph is the outcome of the exceptional facilities enjoyed by the author of studying epidemic cerebro-spinal meningitis clinically during the Texas epidemic of 1912 and pathologically and experimentally in the New York Research Laboratory under the ægis of Dr. Simon Flexner. His purpose is to convey a thorough yet simple description of the clinical and laboratory findings, and to familiarise the reader with the application of laboratory methods to the treatment of the disease. In this purpose he has amply succeeded.

The etiology, symptomatology, and laboratory diagnosis of the affection are entered into at considerable length, and there are important chapters on the complications of the malady and on its treatment. The last of these occupies no fewer than 98 pages, and constitutes one of the best and most comprehensive discussions of therapeutic and prophylactic measures in the disease under consideration in the whole literature. There is a detailed description of the author's new method of administering anti-meningitis serum subdurally. The complications met with in cases of "dry canal" and where the intrameningeal exudate is very thick and plastic are dealt with, as well as the hydrocephalus that occurs in the acute stage. The whole chapter is replete with practical suggestions, and demonstrates afresh the value of scientific research in the furtherance of clinical medicine.

The monograph contains an excellent account of the present state of our knowledge of epidemic cerebro-spinal meningitis; both clinical and pathological illustrations are well reproduced, and the index is good. The author's acquaintance with the literature is wide, but while the work of many previous investigators is constantly referred to, there is a regrettable absence of information as to where their papers are to be found. There are some minor blemishes—misprints and inaccurate grammatical constructions, and several French and German words are incorrectly rendered.

Psychology Applied to Legal Evidence and Other Constructions of Law.

By G. F. ARNOLD, I.C.S., C.I.E., late Member of the Burma Legislative Council. Second edition, revised and re-written in parts. Calcutta: Thacker, Spink, and Co. 1913. Pp. 607. Price 12 rupees.

THE fact that this work has reached a second edition—it was first published in 1906—is a proof that the author's uncompromising attack on the legal system under which he has worked has excited the interest, even if it has not won the approval, of a sufficient circle of readers. To many, however, it is possible that the severity of Mr. Arnold's criticism may appear somewhat excessive, for, though it is common enough to hear grumbles at the delays and eccentricities of the law, there is little evidence of any very intense and widespread dissatisfaction with the administration of justice in this country. It may be, of course, that Mr. Arnold's official career in the public service of India has made him more keenly aware of the imperfections of the English legal system than he would have been had he seen it in operation only in the country of its origin. Founded as that system is on the exaggerated intellectualism of Western civilisation, its application to Oriental races of totally different psychological type can hardly be expected to produce invariably good results; and an observer who failed to bear that qualifying consideration in mind might be easily led to attribute to the faultiness of our jurisprudence what ought more justly to be ascribed to its unsuitability to the Asiatic temperament. Some such explanation seems the most obvious way of accounting for the vigour, not to say violence, of Mr. Arnold's sweeping condemnation of English law and English lawyers; and this view will appear the more probable from the fact that most of the concrete instances of legal ineptitude which he cites are drawn from

the records of Indian courts. The author, however, does not himself suggest any such limitation of his criticism, which is of a more general character and is concerned with the fundamental principles of the legal system. It is under this wider aspect, therefore, that we have to examine his arguments.

The main count in Mr. Arnold's indictment is that the law fails to make use of the conclusions and methods of other sciences, and more particularly of the conclusions and methods of psychology, which, as being the science that deals with mental qualities, human motives and conduct, should be in a special manner the guiding influence in legal theory and practice. It is Mr. Arnold's contention that, so far from admitting and acting upon this self-evident principle, lawyers as a class have constantly displayed a bigoted prejudice against all branches of philosophy, with the result that, when legal methods are examined from the standpoint of modern psychology, they are found to be hopelessly antiquated and faulty, out of harmony, not merely with the more recent conceptions of science, but even with such general knowledge of the mechanism of thought and action as the average citizen uses in his ordinary dealings with his fellows. Developing this idea, the author attacks the legal system for its artificiality of language, its insistence on forms and precedents, its rigid rules of evidence, its principles of interpretation and procedure—in short, for all the characteristic features which lawyers are wont to insist upon as constituting its special strength. That there is a large element of truth in this criticism is indisputable. It is clearly impossible, for instance, to defend that obstinate adherence to the tenets of an extinct psychology which insists on retaining as the criterion of criminal responsibility the absurd rules laid down in the Macnaghten case; and it matters little that in this question legal practice is usually better than legal theory; indeed, the fact rather supports Mr. Arnold's thesis, as proving the strength of that exaggerated conservatism which he imputes as a special vice in the law. And, as the author very acutely shows, the same intellectualist fallacies which have determined the legal attitude with regard to insanity have inspired many other legal views; they are implicit, for instance, in the authoritative doctrines with regard to intention.

It may be freely admitted, therefore, that Mr. Arnold, in this application of psychology to the criticism of law, has on many points made out a good case for his iconoclastic views. And yet his work leaves on the whole an unsatisfactory impression, and just for the reason that it is purely iconoclastic. In his preface Mr. Arnold has anticipated this objection, but he has not answered it, and, indeed, it hardly admits of a convincing answer. In a purely theoretical question an exclusively destructive attitude may, no doubt, be perfectly legitimate; but the law is not a branch of abstract knowledge; it is a practical system evolved by society to serve its self-protective purposes, and it has of necessity the imperfections that belong to its mode of origin. The critic who points out these imperfections, but fails to suggest how they are to be made good, is at once open to the rejoinder that the evils which he deplores may be inevitable in so purely empirical a creation as every legal code must necessarily be. At all events, the existence of such evils can hardly be, as Mr. Arnold sometimes seems to suggest, a sufficient reason for doing away with the legal system, root and branch. When due allowance has been made for the tendency which he occasionally shows to press his criticisms to rather extreme lengths, Mr. Arnold may be congratulated on having produced a valuable and stimulating study of this subject.

Embolism and Thrombosis of the Mesenteric Vessels.

By LESLIE B. C. TROTTER, M.A., B.C. Cantab. Cambridge: The University Press. 1913. Pp. 143. Price 8*s.* net.

THIS book forms an exhaustive study of mesenteric vascular occlusion, presented as a thesis for the doctorate. The author was stimulated to the research by having under his care two cases, but later he increased the number of his original cases to seven, and amended these by collecting and critically analysing in all 360 cases from various sources. The original cases are described in detail and illustrated, and then the whole subject is treated of under the heading of morbid anatomy, which forms the basis of classification, experiments, descriptive anatomy, symptomatology, diagnosis, and treatment.

The author found the most common cause of arterial occlusion to be embolism following lesions of the heart and arteries, whilst venous thrombosis was most commonly found spreading from thrombosis of the portal vein, though in some cases it arose primarily as a result of an infective process in the intestinal tract or in the pelvic organs of the female. The duration of the condition was from two days to a fortnight, whereas the symptoms appeared to be those of acute abdominal mischief. The treatment adopted was that of immediate laparotomy, but it was found that 36·2 per cent. of recoveries resulted from all cases of operation. There are an extensive bibliography and a list of 366 cases.

The compilation added to the careful account of the author's own cases has considerable value. Indeed, if such clinical (using the word in its widest sense) investigations more frequently formed the subjects of theses, much good would accrue to practical medicine.

Handbuch der Frauenkrankheiten.

Von M. HOFMEIER, Professor der Geburtshilfe und Gynäkologie in Würzburg. With 290 illustrations and 10 plates. Leipzig: F. C. W. Vogel. 1913. Pp. 628. Price 14 marks, or bound 16 marks.

BUT little need be said of so well-known a German text-book as this of Professor Hofmeier, more especially as this edition corresponds to the fifteenth edition of Karl Schroeder's book on diseases of women, upon which it was originally based and which it now represents.

The whole work has been well and carefully revised, a great deal of new matter has been incorporated, and a quantity of old eliminated. The number of illustrations has been increased by 22, and many of the old ones have been redrawn. A new chapter has been added on the treatment of gynæcological cases by X rays. As the author rightly remarks, sufficient time has not yet elapsed to allow us to determine with certainty the place which this therapeutic agent will ultimately take, but the results so far obtained by its use are very encouraging. The main indications recognised are hæmorrhage at the menopause and that due to fibromyomata of the uterus. A less definite indication is afforded by cases in which artificial sterility is desired such as

tuberculosis, and cases of disease of the external genitalia. It is also suggested that good results will attend its use in cases of peritoneal tuberculosis and as an adjunct to the use of radium or mesothorium in cases of carcinoma of the uterus. A number of interesting and encouraging statistics are quoted from the various German cliniques in which this mode of treatment is being carried out. Attention is called to the dangers of burning of the skin and of setting up excessive hæmorrhage as the first result of the use of the rays, but nothing is said of the risks of setting up inflammatory changes in the peritoneal cavity and the possible production of changes in the intestinal mucosa and the formation of adhesions. The author lays stress upon the necessity for large doses of hard rays, and points out that small doses of soft rays produce imperfect and disappointing results.

The whole book is a good example of the best type of German text-book.

Normal Histology. With Special Reference to the Structure of the Human Body.

By GEORGE A. PIERSOL, M.D., Sc.D., Professor of Anatomy in the University of Pennsylvania. Tenth edition. With 438 illustrations, 88 of which are in colour. London and Philadelphia: J. B. Lippincott Company. Pp. 416. Price 15*s.* net.

THE eighth edition of this work was reviewed in THE LANCET of Feb. 11th, 1911. The number of pages in the present edition is exactly the same as in the eighth, and the preface bears date, August, 1910. What we said of the usefulness of the work in 1911 remains equally true of the new edition, but some of the coloured illustrations in this new edition do not seem to us to be quite so effective—e.g., the chromatic figures in dividing cells of the epidermis, where one colour is used with a deepening of the same colour for the chromosomes; and the same is true of a section of young periosteum and the adjacent bone. The other two-coloured illustrations of bone are distinctly more effective: The complex maze of cells and colloid of the pituitary body would stand out much better if the figure had been printed in colours. Others in monotone, such as red, might almost as well have been given without colour.

Dynamische Biochemie, Chemie der Lebensvorgänge.

Von Dr. SIGMUND FRÄNKEL, A.O. Professor für Medizinische Chemie an der Wiener Universität. Wiesbaden: J. F. Bergmann. Pp. 600. Price M.18.60.

THIS volume proves the rapid developments which have taken place as the result of the conjoint studies of the physiologist and chemist in regard to the great vital processes. The author is recognised as one of the pioneers in bio-chemical research, and it is evident from the pages in this volume that his own original contributions have filled important places in the story so far as it has advanced. Dr. Fränkel has conducted inquiries of a practical nature on such subjects of importance as adrenalin, cholin, the lipoids, phosphatides, amino-acids, and the reducing and oxidising processes in the tissues which are concerned in metabolism. He shows, as might have been expected, a wide-ranging familiarity with the many subjects embraced in the title of this volume.

The book contains 13 chapters. The first is devoted to the physical and chemical processes involved in the tissues. This is followed by a consideration of the special chemical changes in the organism (oxidation, synthesis, and reduction). Then succeeds a chapter on the ferments, and afterwards sections on digestion, resorption, assimilation, metabolism, the classification of food substances, the chemical functions of the individual organs, the secretions, physiology of the sexual organs, muscle, nerve, skin, kidney, and the blood. The whole concludes with a comprehensive chapter on immune chemistry. There are busy workers in the field of bio-chemistry in all countries having any pretension to occupying a place in the world's science, and therefore no collection of materials can be complete without a copious reference to these international endeavours. Dr. Fränkel recognises the importance of such references or he would not have included, with the pains he has done, what amounts to a guide to the universal literature on the subject in the numerous footnotes given. The work is authoritative and the various presentations of the subject are adroit as well as learned.

LIBRARY TABLE.

Mendelism and the Problem of Mental Defect. I. A Criticism of Recent American Work. Department of Applied Statistics, University College. "Questions of the Day and of the Fray," No. VII. By DAVID HERON, D.Sc. London: Dulau and Co. 1913. Pp. 62. Price 2*s.* net.—The American papers dealing with the inheritance of mental defect which come in for the bulk of the criticism contained in Dr. Heron's pamphlet are three in number—(1) A First Study of the Inheritance of Epilepsy, by Dr. C. B. Davenport and Dr. D. F. Weeks (Eugenics Record Office, Bulletin No. 4); (2) The Inheritance of Epilepsy, by Dr. Weeks (Problems in Eugenics, p. 62); and (3) Chapter IV. of "The Hill Folk," by Miss F. H. Danielson and Dr. C. B. Davenport (Eugenics Record Office, Memoir No. 1). His reasons for devoting so much space and time to their criticism are that "they have been welcomed in this country as of first-class importance," and that their teaching is fallacious. In the first paper the theory was stated rather dogmatically that feeble-mindedness and epilepsy considered together as one character behaved in inheritance as a simple Mendelian recessive. That this work had previously been received without criticism in this country is not in point of fact the case, as Dr. Heron will discover if he refers, for example, to the *Eugenics Review* for July, 1912. In the second paper the conclusions are much more modestly stated, and in the third the theory is abandoned altogether and another more complex hypothesis substituted with the warning that, "in view of the difficulties in analysing individuals [presumably the members of the 'Hill Folk' are here referred to] accurately the study of the inheritance of their traits can only be suggestive." It is impossible to give briefly any account of Dr. Heron's criticism. Much of it appears as regards its substance perfectly justified. Some of it, on the other hand, is hardly fair—as, for example, when he finds fault with Dr. Davenport for inconsistency because he has changed his mind. The whole of it would have been more effective if it had been expressed with less rancour and less rhetoric.

A Companion to Manuals of Practical Anatomy. By E. B. JAMIESON, M.D. Edin., Senior Demonstrator and Lecturer on Anatomy, University of Edinburgh. London: Henry Frowde and Hodder and Stoughton. 1913. Pp. 543. Price 6*s.* net.—Dr. Jamieson has added another pocket anatomy to the

student's outfit. This volume, like all of its class, is intended to assist the student in revising work already done properly both in the dissecting room and with the larger text-books. It shares the danger common to all these little books—that it may degenerate into a mere cram-book for the student who has not so done his work. Indeed, the transition is a perilously easy one. We trust that the student into whose hands this volume falls will respect the author's aims, and use it only after his foundation work has been properly and truly laid.

Text-book of Anatomy and Physiology for Nurses. By AMY E. POPE, Instructor in the School of Nursing of the Presbyterian Hospital in the City of New York. With 135 illustrations, many in colours. New York: G. P. Putnam's Sons. 1913. Pp. 554. Price 6s. net.—Anatomy and physiology are subjects of which the nurse should rightly have some fundamental knowledge, but the proper setting of these subjects for the use of nurses seems to be a particularly difficult problem. In the present instance we note with disfavour the condensing of highly important knowledge into "tips" (or, as the author puts it, "doggerel") not worthy of print, and degrading to memory. We also note that the illustrations are derived from Testut's great work, but that those that are acknowledged are ascribed to Professor F. H. Gerrish, who familiarised them to American readers.

Über den Hospitalismus der Säuglinge. Von D. LUDWIG F. MEYER, Privat-dozenten an der Universität, Berlin. With 31 figures in the text. Berlin: S. Karger. 1913. Pp. 78. Price 4 marks.—The author regards the so-called hospitalism of nurslings as due mainly to three different factors—intestinal infection, improper feeding, and insufficient care. After considering these three factors in detail he illustrates the pernicious influence of the hospital upon such children by observations carried out in the orphan asylums in Berlin. Great stress is laid upon the frequency of diseases of the air passages in nurslings and the disastrous effects of errors in feeding. In conclusion, the author points out that a lowered mortality rate is only to be obtained by the prevention of affections of the air passages and improvements in the methods and technique of artificial feeding.

MISCELLANEOUS VOLUMES.

A NUMBER of books bearing on problems in social economics may be grouped together here.

The Union of South Africa, with its problems, bulks so largely in the public eye just now that Miss VIOLET R. MARKHAM'S interesting and thought-provoking book, *The South African Scene* (London: Smith, Elder, and Co. 1913. Pp. 450. Price 7s. 6d. net), will doubtless be widely read. It is divided into two parts: Travel Sketches, being a description of the author's noteworthy observations during her travels from Cape Town to Victoria Falls; and Some Policies and Problems, in which political, racial, linguistic, social, industrial, and other matters are discussed in a restrained style but with remarkable insight. There are items of medical interest too. The Indian Ambulance Corps, which did good service in the field during the war, commemorated by a monument in Johannesburg, receives a tribute. Miners' phthisis as an industrial problem is considered. The work of the scientific laboratories at Ouderstepoort, under the charge of Sir Arnold Theiler, K.C.M.G., in which, among other scientific researches, endemic diseases are studied in their relation both to animals and man, receives notice; while, of course, Dr. Livingstone's and Sir Starr Jameson's activities as explorer and administrator respectively crop up from time to time to shed a reflected glory on the profession of medicine.

Constructive Conservatism (London: The Stepney Press. 1913. Pp. 64. Price 1s. net), by HARRY ROBERTS, is not, as one might expect from the title, a party political pamphlet, but rather an attempt to point out the way to the fullest development—physical, mental, and moral—of the British race, not through the separation and mutual antagonism of the Syndicalists and Socialists and Liberals and Tories, but through the separation of those who care for the well-being of England and the liberty and well-being of the men, women, and children of England from those who care only for their own careers, or possessions, or logical consistency, or social prestige, or party score. To effect this he advocates the institution of an English national policy in accord with the spirit and ideals and traditions of the English people, which shall have for its object the fullest possible development—physical, mental, and moral—of every child born in England. It is neither visionary nor revolutionary. Though doubtless all will find something to dissent from in it, probably most will find much more that commands their assent. The pamphlet ought certainly to be read by all social economists.——*National Service and National Education*, by ERIC GEORGE, with an Introduction by Lord HENRY CAVENDISH-BENTINCK, M.P. (London: P. S. King and Sons. 1913. Pp. 83. Price 1s. net), is a very excellent little pamphlet in the main, though naturally everyone will not agree with all the details. Mr. George insists upon a point in which most people will agree with him—namely, that the proposals of the National Service League, admirable though their general principles are, fail in one important particular: that they do not propose to begin the training of citizens until the age of 18; whereas, as Mr. George rightly says, the critical age is 14 to 16, when a boy leaves school. His plan, as laid down on page 22, is that all boys should have simple physical exercises and squad drill while at school; that on leaving school at or under 16 they should spend one year at a training school for a partly military curriculum, where strict discipline should be enforced; after this they should be members of the Officers' Training Corps or of a cadet corps up to the age of 18. (Practically the same scheme is advocated in *Constructive Conservatism*, reviewed above.) After this they may, if they liked, join the regular army, the Special Reserve, or the Territorials, but training is to be compulsory up to the age of 18. The training school is to be a boarding school. The scheme is well worth the consideration of the authorities.——*A National System of Education*, by JOHN HOWARD WHITEHOUSE, M.P. (Cambridge: The University Press. 1913. Pp. 92. Price 2s. 6d. net), we learn from a prefatory note, "is issued with the general approval of the executive committee of the Liberal Education Group of the House of Commons, though they are not necessarily committed to its detailed recommendations." If the Liberal Education Group has read Mr. Whitehouse's recommendations its members will feel relieved at his statement, for his recommendations entirely upset, it seems to us, the whole educational system of the country. We are quite willing to allow that that system does need alteration, but Mr. Whitehouse goes too fast. The "additional heavy cost," which he allows will be necessary, is to be met out of the taxes; the school age is to be raised to 16, or possibly higher. As a beginning, we are to have a Royal Commission on Private Schools (Chapter VIII.), a Royal Commission on the Universities of Oxford and Cambridge (Chapter X.), and a Permanent Financial Commission of the Board of Education (Chapter IX.). As to the religious question, Mr. Whitehouse dismisses it as "a very limited and a very small question." It is no part of our duty to say whether the advocates of religious teaching are right or wrong, but they cannot and will not be dismissed in such a cursory fashion.

JOURNALS AND MAGAZINES.

Brain: a Journal of Neurology. Vol. 36. Part 1.—The first number of the new volume consists of three papers of considerable but varied interest. The first is the combined work of the Editor and Dr. E. G. Fearnsides with Dr. J. McIntosh and Dr. P. Fildes, and discusses the question of parasyphilis of the nervous system, the Wassermann reaction being the chief means relied upon in the paper of elucidating the true nature of this clinical condition. The paper is most suggestive and interesting, for it draws a

definite distinction between tertiary and parasyphilitic affections of the nervous system, the former being regarded as depending upon the reaction of the hypersensitised connective tissues and blood-vessels in the nervous system, the latter as depending upon the hyperallergic reaction of the essential nerve elements and neuroglia. Thus the pathogenesis of the two conditions is the same—each being determined by the reaction of the tissues to the spirochæte or its toxins, but in the two cases the tissues reacting are different. In tertiary syphilis nervous symptoms are produced by the pressure of proliferated connective tissue on nerve elements, in parasyphilis the reaction of the nervous tissues themselves leads to their destruction. Such a view is held to explain the intractability of parasyphilitic manifestations by antisyphilitic remedies as contrasted with the cures which follow the use of anti-syphilitic remedies in tertiary syphilitic affections. The second paper is a very elaborate study of the brain of a macrocephalic epileptic by Dr. J. Wiglesworth and Dr. G. A. Watson, and in the third paper Dr. W. G. Spiller discusses the subject of myopathy, and especially the relation to this condition of such cases as those of myotonia congenita, myotonia atrophica, and true muscular hypertrophy. It will be seen that *Brain* continues to maintain the high standard which it has accustomed its readers to expect.

Æsculape for November contains several interesting articles. Mme. Dr. G. Yves-Roy discourses of centenarians in a continued article. Dr. P. Raymond describes the herbarium of Rousseau, consisting of 180 plants mounted by himself and given to Mdlle. Madeline Boz de la Tour, with extracts from his letters to that lady. Dr. E. Sicard discusses the question of euthanasia, strongly combating the plea for "merciful interposition" in suffering, and especially insisting that it is under no circumstances the part of the medical man to destroy life. Dr. Just Navarre gives interesting sketches of the medical men who attended Pascal in his last illness, dealing in this number with Noel Vallant, François Quénaud, Nicholas Brayer, Pierre Hommels, and Eusebius Renaudot. Dr. H. Douzane, an army surgeon, continues his impressions of Morocco before the protectorate. Dr. Bonnette writes of the death of Sergeant Blandan, a young hero of the Algerian army in 1842, who was wounded in the thigh, the chest, and the abdomen, and was succoured on the battlefield by an assistant surgeon named Ducros, although he had but just immobilised his own right arm, shattered by the explosive effect of a ball fired at close quarters. An excellent account of Professor Le Double, the man and his work, follows from the pen of Dr. Dubreuil-Chambardel and Dr. Faix.

The Military Surgeon.—In the number for December Major R. B. Miller, of the Medical Corps, United States Army, describes the successes and difficulties in the sanitary administration of a divisional camp (8000 men) at Texas City from March 1st to July 31st. He discusses in most useful detail latrines, latrine covers, destructors, fly-traps, and manure-burning. He was himself the sanitary officer, and finds that that unit presents the best sanitary appearance whose commander is interested in sanitation and gives it his personal attention; further, that surgeons really interested and energetic always managed to obtain good results in their regiments. Stale beer, fish, and meat make the best baits in fly-traps in his opinion, while to burn out latrine pits, which should be done daily, 5 pounds of hay per company, or 1½ gallons of oil, suffice, half a barrel of quicklime being added just before the pit is filled in. Lime inhibits the growth of bacteria, but does not reach fly larvæ. Typhoid prophylaxis was complete, and there were no typhoid cases. Major W. W. Reno again[1] draws attention to the accelerated removal of wounded off the battlefield which would be secured if his scheme for putting wheels on stretchers and harnessing the ambulance mules or horses to these, which he terms ambulance-travois. His paper is very suggestive and has good illustrations. He calculates that he can in the same time so remove six times as many wounded from the dressing stations to the ambulance as can be moved by bearers in the manner now recommended. Captain C. E. Yount, of the Medical Corps of the National Guard, notices that Mediterranean fever was first reported in the United States in 1905, but that it has quite possibly existed there, particularly amongst goatherds, for 25 years, and that it is now not infrequently met in Arizona, Texas, New Mexico, and California. He suspects the disease was carried by goats imported from Malta, and records the large number of cases which occurred in the Italian army in Tripoli in 1911–1912. It is noted that there is far more tuberculosis in the French than in the German navy, and this is ascribed to the more frequent infection of French sailors in their homes, for tubercle is a scourge in Normandy and Brittany, from which provinces France draws most of her seamen.

[1] THE LANCET, Feb. 1st, 1913, p. 343.

Dental Record.—The January issue contains a long article by J. F. Colyer on Abnormalities in the Position of the Teeth in Animals. There are close on 50 illustrations, mostly of specimens contained in the Odontological Section of the Museum of the Royal College of Surgeons of England. The author shows that many of the abnormalities met with in man are also to be seen in the lower animals. The somewhat frequent irregularity in the monkeys of complete displacement of a premolar he considers is intimately associated with the developmental position of this tooth in those animals. Reference is made to the difference in the arrangement of the teeth in species possessing long-muzzled and short-muzzled varieties, and he considers these irregularities are evidence of the greater variation of the jaw compared to the teeth.—Dr. J. Sim Wallace continues his paper on Recent Investigations of the Causation of Dental Caries, and expresses the opinion that sulphocyanate of potassium is not related to the incidence of caries. The paper also contains interesting remarks on the relation of alcohol to caries.—Mr. G. Northcroft gives an account of a Modification of the Apparatus suggested by Mr. W. W. James for the relief of mouth breathing.

British Dental Journal.—The issue for Jan. 1st has a short note on two cases of Teeth-containing Cysts, which shed a ray of light on the pathology of this type of cyst. There is also an article by Mr. R. M. Wormald, briefly summarising the present position of army dentistry in the different nations.

Jahreskurse für ärztliche Fortbildung. Munich: Lehmann. Price 18 marks per annum.—The October number contains a review on the subject of the various forms of acute meningitis by Dr. H. Schottmüller. He speaks first of the technique of lumbar puncture and emphasises its importance in the differential diagnosis, and then passes in review infective meningitis due to the pneumococcus, staphylococcus, streptococcus, meningococcus and influenza bacillus, tuberculous meningitis, and meningitis comitans. He recognises that a few more or less unquestionable cases of tuberculous meningitis have recovered. By meningitis comitans is meant a condition in which the symptoms of meningitis are present as a complication of brain abscess, sinus thrombosis, or of cortical hæmorrhage, often following otitis media, but there is no bacterial invasion of the meninges, and the lumbar puncture shows an excess of leucocytes and a little albumin, but no organisms. With reference to the treatment of the various forms of meningitis, lumbar puncture, followed, it may be, by washing out with chinosol or lysol, and the administration of a suitable serum, are mentioned with favour. Two writers next consider the subject of the mutation of bacteria, and the poisonous effects which may follow the administration of animal extracts given intravenously. Lung and liver extracts, in particular, produce such effects. A general review of recent work bearing on immunity follows. Dr. M. Mayer writes on tropical medicine, with special reference to the insect carriers of disease.—The November part is devoted to diseases of the eye, nose, and teeth. Professor Krauss discusses inflammation and other diseases of the lacrymal apparatus, and then passes on to consider the value of salvarsan in syphilitic affections of the eye, which gives better results when the front of the visual tract is diseased than when the back is at fault. Good results are also obtained in syphilitic lesions of the optic nerve, but not in interstitial keratitis. The etiology and treatment of glaucoma are also spoken of. Professor Preysing devotes his article to a description of the various signs and symptoms of disease of the pituitary gland, with illustrations, largely following the experimental work of Achsner. This differs from Cushing's well-known results in some respects; for instance, total extirpation was not always fatal. The various routes by which the gland may be removed in man are figured and described. The operation mortality is thus given: 26 patients, Hirsch route,

11·5 per cent. died; 29 patients, Cushing route, 13·7 per cent. died; 45 patients, Schloffer route, 37·8 per cent. died; 14 patients, von Eiselsberg route, 28·5 per cent. died. The writer describes a palatine route. It will be seen that the endo-nasal approach gives better results than that by way of the ethmoidal cells. Professor Dieck discusses the dental origin of trigeminal neuralgia.

ROYAL COMMISSION ON VENEREAL DISEASES.

AT the ninth meeting of the Royal Commission on Venereal Diseases, which was held on Dec. 15th, 1913, evidence was given by Mr. J. Ernest Lane, senior surgeon of St. Mary's Hospital and of the London Lock Hospital, and a member of the Royal Commission.

Mr. Lane said that in his opinion venereal diseases are attended by just as great a mortality as tuberculosis or cancer, and although it was not possible to obtain figures to support this view, it was one which had been more or less frequently expressed by well-qualified persons. He thought that the diseases were somewhat less prevalent than 20 or 30 years ago, but on this point it was very difficult to speak with certainty; the statistics of death certified as due to syphilis did not give any idea of the prevalence of the diseases. Mr. Lane said that, although large subscriptions are given to the cause of combating other diseases, nothing has been done with regard to venereal diseases, and public money has never been expended except in carrying out the Contagious Diseases Acts. He laid stress on the necessity for improved and free hospital treatment, and said that every patient suffering from any form of venereal disease ought to be entitled to gratuitous treatment and medicine and to bacteriological and other tests. If it is desired to cure syphilis and get rid of the disease anything that would aid early diagnosis ought to be at a patient's disposal without expense to him. In any scheme for the efficient treatment of the diseases the establishment of night clinics was essential.

On the subject of notification Mr. Lane said that though he had formerly been in favour of notifying all cases of venereal disease to the sanitary authority, he had now modified his view because he was convinced that notification would deter sufferers from seeking proper advice and would lead to increased recourse to quack treatment. Dealing with the question of the education of public opinion with regard to venereal diseases, he said that in the first place the infected person must be instructed. It should be made compulsory for medical practitioners to supply to every patient suffering from venereal disease printed instructions as to the nature of his disease and as to the measures he should adopt to avoid spreading the trouble; copies of these instructions should be supplied gratuitously to the doctors. Secondly, he would suggest that all institutions where there are a large number of employees or institutions such as colleges and universities ought to have some course of lectures explaining the dangers of venereal disease. It was also of the greatest importance that the standard of knowledge of these diseases in the medical profession should be raised; in the past the teaching given in the medical schools was very inadequate, but steps were now being taken in some of the more important hospitals which should lead to an improvement in this respect.

Mr. Lane gave some statistics of the work done at the London Lock Hospital. He showed that during the last 30 years there has been a remarkable diminution in the number of prostitutes treated at the Female Hospital; at the present time the majority of the female patients were very young girls, and 13 per cent. of the patients were married women. All the cases in the children's wards and the greater part of the married women were examples of innocent syphilis. In the Male Hospital the new out-patient department opened in 1911 had proved most satisfactory, and the number of attendances was increasing; a new in-patient department was opened in November last with three wards perfectly fitted with all modern accommodation for 40 patients.

At the tenth meeting, held on Dec. 19th, Dr. T. H. C. Stevenson, Superintendent of Statistics to the Registrar-General of England and Wales, attended and gave evidence supplementing that which he gave at the first meeting. Dr. Stevenson said that though the statistics tabulated from death registers by the Registrar-General cannot be claimed to afford any measure of the absolute amount of mortality from venereal disease, they do throw light in varying degree upon its relative amount, whether the comparison made be historical, geographical, or social. Looking at the matter from the historical point of view, the curve of mortality from syphilis in England and Wales shows a very large and rapid rise between 1850 and 1868, followed by a period of fairly sustained elevation till about 1886; this is succeeded by ten years of rapid fall, and the fall has continued, though it has become less rapid since 1896.

Dr. Stevenson was of opinion that the fall recorded in the last 30 years represented a genuine decrease in the mortality from the disease; he gave several reasons in support of this view, and referred also to the large contemporaneous fall in the curves showing prevalence of syphilis in the army and navy. To illustrate the incidence of syphilis and diseases resulting from it on various occupational and social classes, tables had been prepared in which the male population was graded according to occupation into five main groups and three additional groups (textile workers, miners, and agricultural labourers) representing the three largest single industries. Of the five main groups, the first consisted of the upper and middle classes, and was sufficiently comprehensive to include clerks and insurance agents; the fifth group represented unskilled labour. The most striking feature of the tables was the uniformly low mortality of textile operatives, miners, and agricultural labourers, the last group especially yielding very low rates. Of the five main groups the highest mortality was found in Group 5. The mortality from syphilis was lowest in Group 1, but the mortality recorded against it from the parasyphilitic diseases was high, and for locomotor ataxy the rate was higher than that of any of the other groups.

Taking all the circumstances into consideration Dr. Stevenson conjectured that syphilis is most prevalent amongst the highest and lowest of the five social classes he dealt with, and that the three great industries of textile manufacture, mining, and agriculture are almost certainly exceptionally free from the disease. With regard to the geographical distribution of the diseases the tables furnished by Dr. Stevenson indicated that the prevalence in the large towns was much greater than in the rural and small urban districts.

FOREIGN UNIVERSITY INTELLIGENCE.—*Bologna:* Dr. Giuseppe Ficai has been recognised as *privat-docent* of Hygiene.—*Bonn:* Dr. R. O. Neumann, professor in Giessen, has been appointed to the chair of Hygiene, in succession to Dr. Kruse.—*Florence:* Dr. Riccardo Chiappella has been recognised as *privat-docent* of Hygiene and Sanitary Police.—*Freiburg:* Dr. K. Ziegler, of Breslau, has been appointed Extraordinary Professor of Medicine.—*Göttingen:* Dr. W. H. Schultze, *privat-docent* of pathological anatomy, has been granted the title of Professor.—*Greifswald:* Dr. P. Römer, extraordinary professor in Marburg, has been appointed to the chair of Hygiene, in succession to Dr. Löffler.—*Harvard:* Dr. Reid Hunt has been appointed to the chair of Pharmacology.—*Heidelberg:* Dr. Hans Petersen has been recognised as *privat-docent* of Anatomy.—*Naples:* Dr. Domenico Enca and Dr. Annibale Taliercio have been recognised as *privat-docenten* of Midwifery and Gynæcology.—*New York (University and Bellevue Hospital Medical College):* Dr. William B. Tremble, lecturer, has been promoted to the Professorship of Dermatology and Syphiligraphy.—*Padua:* Dr. Antonio Berti has been recognised as *privat-docent* of Medical Pathology.—*Parma:* Dr. Aldo Tedeschi has been recognised as *privat-docent* of Hygiene.—*Pisa:* Dr. Renato Pirani-Coen has been recognised as *privat-docent* of Midwifery and Gynæcology.—*Pittsburg:* Dr. J. Heard has been appointed Professor of Medicine.—*Rome:* Dr. Francesco Marras has been recognised as *privat-docent* of Hygiene.—*Sienna:* Dr. Mario Chiarugi has been recognised as *privat-docent* of Surgery and Operative Medicine.—*Toronto:* Dr. Fred Marlow has been appointed Adjunct Professor of Gynæcology.

New Inventions.

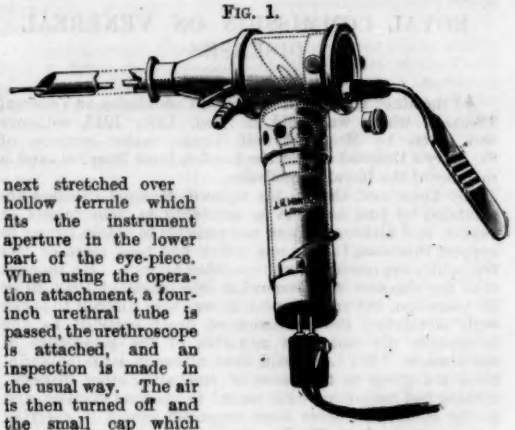
AN OPERATING AND OBSERVATION URETHROSCOPE.

THIS instrument was designed as a simplification of the existing aero-urethroscopes, and is one that allows greater facilities for intra-urethral operations under air distension than was previously possible.

The urethroscope follows the usual type of instruments with "external illumination," the light from the electric bulb being focused, by a condenser, on a mirror set at the angle of 45 degrees. By this it is reflected down the urethral tube. The observer looks through a hole in the centre of the mirror. In many details, however, this urethroscope departs from the design of other instruments. It consists of a T-shaped tube. One horizontal limb of the T is conical, and ends in a nozzle that fits the standard urethral tubes now in use. The other horizontal limb is very short and is slotted to receive the "eye-piece." The latter is a strong metal ring that fits accurately into the horizontal tube, and is held in place by two small binding screws. Posteriorly it carries the window through which the observer looks. This window occupies the upper two-thirds of the circle, while the lower third is pierced by an aperture through which the instruments are inserted for the purpose of operation. When the urethroscope is used for observation this aperture is closed by a small metal cap, which engages by means of a bayonet catch. In front of this window the eye-piece carries a strong metal frame to which the mirror is attached. This is so adjusted that when the eye-piece is in place the mirror reflects the light exactly down the urethral tube. This adjustment is effected before the instrument leaves the factory, and as the eye-piece is so strongly made no ordinary rough usage can alter the position of the mirror. The vertical limb of the T contains the lamp-holder, and at the junction of the two limbs the condensing lens is fixed. The lamp-holder slides within the vertical tube for the purpose of focusing; the movement is controlled by means of a stud that runs in a spiral slot. This is the only adjustment that need be made by the observer, and that only when a new lamp is fitted. The lamp, condenser, and mirror are indicated in the illustration by stippling. (See Fig. 1.)

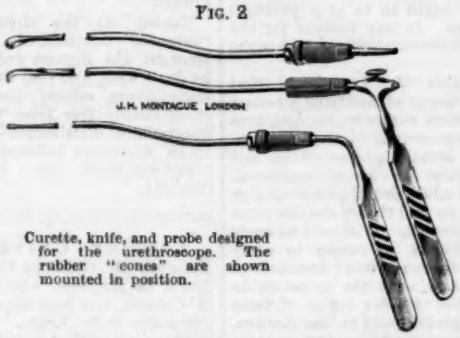
The operation attachment is also extremely simple, and practically any type of instrument can be used with this urethroscope. I have designed a probe, knife, curette, electrolysis needle, and an electric cautery to fit it. All these instruments have a double bend on the shaft to allow for the taper of the urethroscope nozzle. In order to prevent the air escaping when they are in use I have designed small indiarubber cones about one and a quarter inches long, and a quarter o an inch in diameter at the base. The apex of each cone is so narrow that it grips the shaft of the instrument tightly. The cone is first threaded on to the shaft so that the apex lies about half an inch from the handle, and the base is directed towards it. The base of the cone is next seized and pulled forward over its apex. This has the effect of turning the wider part of the cone inside out, and into it the apex becomes invaginated, as in Fig. 2. The base of the cone is next stretched over hollow ferrule which fits the instrument aperture in the lower part of the eye-piece. When using the operation attachment, a four-inch urethral tube is passed, the urethroscope is attached, and an inspection is made in the usual way. The air is then turned off and the small cap which closes the "instrument aperture" is removed. The required instrument is now passed through the aperture, and the ferrule on the cone is engaged in the bayonet catch on the eye-piece. Finally the air is again turned on. The cones are threaded over the points of the instruments, except in the case of the knife and curette, where it is obviously impossible to do so. Both these instruments are provided with detachable handles for this purpose. Once a cone is adjusted on the shaft of an instrument, it need not be touched until the rubber is perished, and it is necessary to replace it. By means of this contrivance one gets a forward and backward range of movement of at least one inch, free lateral movement, and an air-tight joint. As long as the apex of the cone is invaginated, the greater the air pressure, the more secure the joint.

FIG. 1.



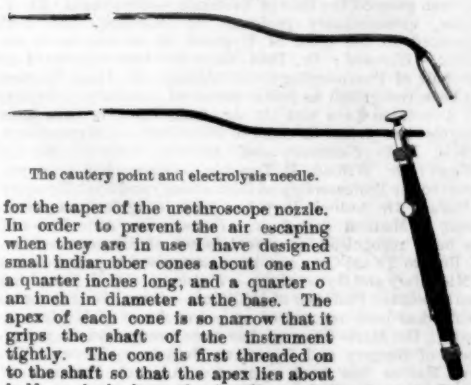
Urethroscope, showing a probe mounted in position.

FIG. 2



Curette, knife, and probe designed for the urethroscope. The rubber "cones" are shown mounted in position.

FIG. 3.



The cautery point and electrolysis needle.

Amongst the advantages of this instrument are the following. 1. Simplicity; only one adjustment need be made, and that only when a new lamp is fitted. 2. Durability; the mirror, lens, and all vulnerable parts are enclosed and protected from damage. 3. Good illumination is obtained; as the urethroscope is so compact the object is always near the observer's eye. At the same time there is a total absence of troublesome reflections. 4. The ease with which the operating instruments can be inserted or changed. 5. Freedom of movement and delicacy of touch are retained when operating under air distension.

The urethroscope and instruments have been made for me by Mr. J. H. Montague, New Bond-street, London, W.

Harley-street, W. J. SWIFT JOLY, F.R.C.S. Eng.

POST-GRADUATE COURSE ON THE FEEDING AND CARE OF INFANTS.—In view of applications for permission to attend separate lectures of this course, the National Association for the Prevention of Infant Mortality has decided to issue tickets at 1s. each for any single lectures that students may desire to attend. Prospectuses and tickets may be obtained from the secretary, 4, Tavistock-square, London, W.C.

THE LANCET.

LONDON: SATURDAY, JANUARY 10, 1914.

Vaccines from the Standpoint of the Physician.

THE lapse of time puts new discoveries and new developments in all branches of knowledge into their true perspective in the scheme of things known and accepted. The impetus which scientific research in pathology, bacteriology, and pharmacology has given to the search for new remedies and methods of treatment affords one of the most striking features of the medicine of the present day. That these methods are too often employed unscientifically by those engaged in the practice of medicine not infrequently brings discredit upon valuable methods, so that the perfervid enthusiasm with which they are at first greeted gives place to disappointment and even undeserved neglect. Practical medicine is in a hurry for new and more effective remedies, and the maxim to prove all things is forgotten in the desire to advance. New remedies should be used critically, and statements made about them should be tested in the light of experience. In these matters the medical profession owes an important duty to the public. Owing to the wide and sometimes too early publicity given by the daily press to novelties in medicine, hopes are raised only to be doomed to disappointment, and the distrust and dislike of fresh methods, which were characteristic of former generations, have given place to a too avid demand for trial of the so-called latest advances of medical science. For these reasons, among others, discussions such as that announced to take place at the Section of Medicine of the Royal Society of Medicine on Tuesday, Jan. 27th, on the subject of Vaccines from the Standpoint of the Physician, serve a very useful purpose, and we look forward with great interest to the reports of this particular discussion.

Although, as its name suggests, vaccine-therapy is by no means new in principle, introduced as it was by JENNER, and further developed by PASTEUR and KOCH, yet its wider applications are comparatively recent, and are due in no small measure to the work of Sir ALMROTH WRIGHT and his co-workers and pupils. They have endeavoured to work out the general principles underlying the use of vaccines, to elucidate the manner of their action, and to explain their effects in terms of the general theory of immunity to bacterial agencies. Essential to advance as these aspects of the problem are, it must not be forgotten that they are in a sense theoretical, since they depend upon the assumption of certain general reactions, which, though they may be established for certain bacterial agencies, must not yet be regarded as generalisations. The standpoint of the practising physician must be considerably utilitarian. He requires to know in what infections vaccines are of proved value, in what forms of those infections and at what stages they are best employed, what doses give the best and most lasting results, at what intervals they shall be given, and for how long continued. Questions such as these will, we venture to hope, occupy a prominent place in the forthcoming discussion. It may probably be taken as generally accepted that vaccine-therapy affords a noteworthy addition to our means of treatment of diseases produced by bacterial agencies, but owing to the many difficulties involved and the large amount of work still necessary to fill up gaps in our knowledge, the time is perhaps not yet ripe for the discussion of its comparative value in regard to other methods. From the theoretical standpoint it would appear to be the ideal form of treatment, since it seems to be a direct appeal to the natural processes of immunity. But the history of antitoxic serums shows how much we should be on our guard against generalisations from particular cases, since, great as their value undoubtedly is in infections where soluble toxins are the chief factor in the production of the disease manifestations, their use is so far strictly limited to these conditions and by no means of the general application which was originally hoped for. Moreover, vaccines as at present prepared must of necessity be crude and of highly complex and even variable composition, so that the constituent which is actually effective may be accompanied by numerous other substances derived from the bacterial protoplasm or from the culture medium, which may hinder or oppose its action or produce other undesired effects. The history of the use of tuberculin, the vaccine which has probably so far been more widely used than any other, illustrates this in the most marked manner. The long and ever-increasing list of modifications of tuberculin affords the best evidence of the continued search for purer and more constant, if not simpler, forms of tubercle vaccine.

Another point of practical interest to which we hope some attention may be given is the determination and authoritative statement of the different methods of vaccine treatment to be applied to local infections and to acute and chronic general infections respectively. Sir ALMROTH WRIGHT, in explaining the actions of vaccines in disease, is careful to differentiate between their local and their general actions, and to discuss the relation of these to dosage and to the nature of the bacterial bodies and to the

cells and fluids of the infected person. The practical application of these matters is one of great importance. A further aspect of the use of vaccines of which the physician is bound to take cognizance is that which is so admirably illustrated by the report of Sir ALMROTH WRIGHT and his collaborators, Dr. W. PARRY MORGAN, Dr. L. COLEBROOK, and Dr. R. W. DODGSON, on Prophylactic Inoculation against Pneumococcus Infections, published in last week's and in this present issue of THE LANCET. As a study of scientific method applied to the elucidation of a difficult problem in connexion with vaccine treatment, and as an illustration of the laborious character of such work, we can commend this report to our readers. Its interest, however, is enhanced by the promise which it holds out of a truly specific method of dealing with pneumococcus infections both prophylactically and therapeutically. It seems difficult to resist the conclusion that the pneumococcus vaccines employed by these observers lessened the incidence and the mortality of pneumonia and other conditions produced by the pneumococcus among large collections of natives, who were highly susceptible to its activity and under conditions favourable to the spread of infection. For scientific reasons Sir ALMROTH WRIGHT and his collaborators confined themselves to the study of the prophylactic effects of these vaccines, but a consideration of these statistics would seem to indicate that their use favourably influenced the progress of cases inoculated during the incubation period and early in the disease, so that it is not too much to hope that further work on the same lines may establish the therapeutic value of these vaccines in pneumococcus infections. This report forms an excellent introduction to the forthcoming discussion, since it illustrates in such a clear manner the nature of the problems involved in vaccine-therapy, the difficulties to be contended with, and the practical methods of dealing with them. One of the difficulties of the physician in the application of vaccine-therapy is the practical impossibility of controlling the effects of his treatment by means of the opsonic index or the other quantitative immunity reactions which are employed under laboratory conditions. It may be hoped, therefore, that a further useful outcome of the discussion will be to set up some general scheme for the observation and record of cases submitted to vaccine treatment, so as to afford a more uniform basis for comparison of results, and for the compilation of trustworthy statistics by enabling the results of isolated groups of cases observed by different workers to be summed together and raised to the dignity of a mass-experiment. Lastly, we may also express the hope that the discussion at the Royal Society of Medicine will serve to emphasise the fact that vaccines, being potent agents capable of doing harm when injudiciously employed, should be given only with a sense of responsibility in conditions in which their use is definitely indicated and confirmed by bacteriological evidence.

The Asylum Medical Service.

RATHER more than 12 months ago there appeared in the columns of THE LANCET some letters calling attention to the very unsatisfactory position of assistant medical officers in public asylums for the insane in this country. The note of discontent sounded in these letters has since then found an echo throughout the asylum service, which, by its vigorous resonance, gives convincing evidence of the reality of the grievances that our correspondents sought to ventilate. But we live in times when, as experience should assuredly have taught the medical profession, it is of little use to prove the justice of your cause unless you are in a position to drive home your proofs by arguments of the more practical sort that appeal to public bodies and administrative departments. This fact, we are glad to observe, has been fully recognised by the assistant medical officers. Instead of being content with a simple statement of the disabilities under which they labour, they have very wisely taken steps to organise themselves into an association for the removal of these disabilities and for the protection of their professional interests. This movement was inaugurated at a meeting of the assistant medical officers of the public asylums in the Midlands, held at Birmingham on Nov. 18th, when a provisional committee was appointed and a guarantee fund was raised; and since that date similar action has been taken by the assistant medical officers in the North of England and North Wales at a meeting at Manchester on Dec. 3rd, by their colleagues in the West of England and South Wales, who met at Bristol on Dec. 4th, and by the assistant medical officers of the asylums in the metropolitan district at a meeting in London on Dec. 5th. These proceedings are preliminary to the formation of a general association of officers of this rank in the asylum service of England and Wales.

The conditions which have given rise to this widespread spirit of dissatisfaction are not, of course, altogether of recent growth, but the acute consciousness of their injustice and the resolute determination to alter them may doubtless be attributed in large part to influences which have become increasingly operative within the last few years. Men who by temperament or circumstances are tempted to enter public services can now find many openings offering higher remuneration and more brilliant prospects than can be looked for even in asylums governed by the most progressive committees; the very newness of these openings, ensuring as it does a relatively rapid advancement to positions in which there is larger responsibility and wider scope for initiative, gives them a manifest advantage over an old-established service where promotion is necessarily slow and certain. The multiplication of these more immediately attractive careers, in connexion with the public health service, the inspection of school children, the control of tuberculosis, and so forth, has by contrast brought

out more clearly the unsatisfactory features of the asylum service. And when criticism is turned in this direction it finds no lack of suitable material to work on. As Mr. F. J. STUART pointed out in his speech to the assistant medical officers at the meeting in London last month, it is impossible to retain the best men in a service where all but the highest posts are inadequately paid, where promotion to such posts is more dependent on local accident and extrinsic influences than on scientific distinction, and where, moreover, for officers below the rank of superintendent, the conditions of service are in certain respects derogatory to personal and professional dignity. During the past year this question has engaged the attention of the Medico-Psychological Association, and a committee of that body has instituted inquiries into the conditions of asylum work and the status of asylum assistants in other countries. The interim report presented by the committee was published in the *Journal of Mental Science* for last October, and the facts which it sets out are amply sufficient to explain why assistant medical officers in English asylums are dissatisfied with their present position. The circumstances are, of course, very different in different countries, and a comparison of the asylum systems with one another and with the English system is therefore somewhat difficult; but so far as concerns this particular question of the status of assistant medical officers, the facts must certainly warrant the conclusion that, as a general rule, the junior physicians on the staff of a French or German asylum have a wider field of professional activity and enjoy a larger measure of personal independence than do their colleagues in English mental hospitals. Interest in scientific work meets with more direct encouragement, and greater facilities for original research and for special psychiatric study exist. In many countries the senior medical officers have a considerable degree of autonomous responsibility in the treatment of their patients and in the general management of the sections under their charge; and by the general permission to marry and by the liberal provision of suitable married quarters some of the most irksome of the social restrictions that weigh so heavily on assistant medical officers in English asylums are obviated. It is, of course, more than probable that there is another side to this picture, and that the physicians in continental asylums have grievances of their own; but even if this be the case, it obviously cannot constitute any reason why the better features of the asylum systems of other countries should not be adopted and combined with whatever special advantages are to be found in our own institutions. This, it is to be presumed, is one of the immediate aims to which the proposed Association of Assistant Medical Officers will direct its energies, and the action of the Medico-Psychological Association indicates very clearly that in this matter the acknowledged leaders of English alienism are in full sympathy with their junior colleagues. There can be no question that the medical profession outside the psychiatric specialty will be equally ready to adopt the same attitude and to support any well-considered and temperate action calculated to remove the conditions which at present render the asylum service one of the least attractive careers open to the young physician. And there are encouraging signs that the more enlightened public bodies are also fully alive to the urgency of this problem, and that they will welcome proposals of a practicable character tending to bring about a better organisation of the medical care of the insane. The difficulties which are being encountered in finding applicants for the junior applicants in many asylums can hardly fail, indeed, to force the matter on the attention of local authorities.

The very fact that so many conditions are cooperating to form an atmosphere favourable to reform imposes a grave responsibility on those who may have any share in framing the policy of the medical profession in regard to this question. The problem goes deeper than the personal grievances of the assistant medical officers in our asylums; it reaches down to the very foundations of the scientific position of psychiatry and its relation to the rest of medicine. These larger issues we do not now discuss, but they will have to be fully examined and the practical difficulties which they present will have to be met before a satisfactory solution can be found for the questions which are agitating the asylum service. As a preliminary the comparison with conditions which hold good in other countries may again be helpful. It may suggest, for instance, that some of the advantages which are enjoyed by asylum officers abroad are due in large measure to the fact that in continental countries psychiatry occupies a less isolated position and is kept in closer contact with the main stream of medical science than is, generally speaking, the case in England. And, as bearing on this point, it may be worth inquiring how far the more favourable position of psychiatry in these countries is due to the existence of a State service with its wider facilities for interchange between the various asylums, its freedom from the control of petty local interests, and its larger field for scientific ambition. Of course, such a system has its drawbacks as well as its merits, but in the particular case of the asylum service the worst of these drawbacks exist already and are probably inevitable under any system, so that the strongest arguments against State organisation as applied to medicine are irrelevant in this instance. The whole question, however, is one which calls for careful and detailed discussion, and it is, therefore, rather as a tentative suggestion than as a considered opinion that the solution of a State service is put forward as a possible way of bettering the professional and social status of asylum medical officers and of advancing the interests of psychiatry.

The Sterilisation of Milk and Allied Questions.

CONSIDERABLE prominence has been given in the press during the last fortnight to the question of whether milk should be sterilised. This term, it may be observed, has been much misused in regard to milk. Pasteurisation consists usually in heating the milk to a temperature of 150°–160° F. for 20 or 30 minutes; scalding or boiling generally means heating near to boiling point; while sterilising, if strictly carried out, as is the case in a few special processes of limited use, is done by exposing the milk to a temperature of 212° F. for 40 minutes. It is usually assumed that under the first process there is no important change in the composition of the milk, but that there occurs a partial destruction of bacteria, chiefly those of the lactic and coli group. Under the second process a more advanced sterilisation is effected, with some decided changes in the composition of the milk; and under the third, complete sterilisation for all practical purposes, including the destruction of the tubercle bacillus, is attained. The last, however, is claimed to alter the dietetic properties of the milk somewhat further than mere boiling, at least when employed for infant feeding.

In the discussions to which we refer, however, the term "sterilisation" has been applied practically to all processes of heating milk, and has related to the effect of heat both on living organisms and on the ferments and the supposed "vital principles" of milk, on which much stress is laid by Mr. EDMUND OWEN in the letter which will be found in another column. They originated with an account published in the *Times* of Dec. 29th, 1913, of the production of clean raw milk, immediately refrigerated, at Mr. ROBERT MOND'S experimental farm near Sevenoaks, and its use at the Infants Hospital, Vincent-square, Westminster. Mr. MOND is reported to have concluded, from observations made at the latter institution, that children fed from birth on sterilised or condensed milk are habitually weak and ill-nourished and prone to tuberculosis. Similar statements have from time to time been made, sometimes by physicians with special opportunities of observing the health of infants of the well-to-do class who are brought up by hand. But it is well known that they are by no means supported by the experience of the large municipal milk depôts, clinics, and analogous places where hand-feeding is systematically undertaken on a large scale. In these establishments care is usually taken to obtain milk of good quality and free from infection, but almost invariably it is pasteurised or boiled before being consumed, while in the milk depôt at Leicester dried milk, which has presumably been thoroughly devitalised (to use a current expression), has been exclusively used for years. The consideration that infantile scurvy or scurvy-rickets may, though rarely, result from the treating of the milk is usually taken into account, and the concurrent use of lemon or orange juice recommended as a preventive; but with this reservation the results obtained and published certainly seem to prove that boiled or pasteurised milk is capable of affording the essential nourishment of infants and that infants thrive on it.

Some of the data available on this subject, principally from foreign sources, were collected two years ago by Dr. J. E. LANE-CLAYPON, and issued in pamphlet form by the Local Government Board. They showed in the case of man and the lower animals alike that for the young of a given species there is an undoubted superiority—probably attributable to the protein constituent—in milk derived from animals of that species over milk obtained from other species, whether sterilised or not. Such differences as could be shown between the results of sterilised and unsterilised cow's milk when given to infants were of a very minor order, not to be compared with those which obtained between cow's milk and human milk. The criticism may be made that the infants which get fed through the agency of milk depôts and clinics soon pass out of observation when they cease to be infants, and their after-history, in the matter of rickets, tuberculosis, and other ailments, is not fully ascertained. But this deficiency in evidence is not proof that they have been harmed by the heating process applied to the milk. Any new facts which can be obtained in this direction will be of great value and will deserve and receive careful study, but it will be necessary for fresh observations to be exact, prolonged, and on a scale of considerable magnitude if they are to produce the conviction that to submit cows' milk to sterilisation before giving it to the infant is to create a substantial danger to the infant's health. Mr. MOND also considers the risk run by the consumption of milk from tuberculous cows to be greatly over-estimated, and bases this on his own escape from the disease after drinking such milk, and on the argument that children fed with milk from tuberculous cows have not developed tuberculosis. An argument thus presented, however, must be somewhat futile, even on the assumption that in each case the observations have been maintained sufficiently long to be of practical value. It is no more to be expected that every child who takes a dose of tubercle bacilli in its milk should contract clinically recognisable tuberculosis than that every child who comes into close contact with an advanced case of human phthisis will do so. The proportion of town milk in which tubercle bacilli can be found is so large that on this conception of its virulence we should soon have no child population at all. The facts remain that tuberculosis of childhood is widely and seriously prevalent, and that there is a mass of research, including the invaluable investigations of the recent Royal Commission on Human and Animal Tuberculosis, which establishes the conclusion that a large proportion of the cases of tuberculosis

occurring in childhood in this country are due to tuberculous infection of bovine origin—in other words, to tuberculous milk.

The risk of tuberculosis, together with the results of other infections and contaminations to which milk under present commercial conditions is liable, has to be set against the suggestion of risk, such as it is, from "sterilisation" in some form. Present knowledge seems to require that an affirmative answer should be given to the parents who have no reliable guarantee that the infant's milk comes from healthy cows and is otherwise properly treated, and who ask whether they had better boil it or at least subject it to thorough pasteurisation. Apart from the special question of infant feeding, indeed, the same answer must be given as regards the usual domestic supplies of milk. It ought not, however, to be necessary, and with the habitual preference shown for raw milk in this country the advice is not likely to be generally followed. For this reason we have strongly insisted upon the importance of the general revision and consolidation of the laws relating to the milk-supply which has so long been promised, together with the vigorous local action for the suppression of bovine tuberculosis, for which it is understood that the proposed legislation will provide. The suggestion has been made that, as the Government has so long delayed measures to protect the milk-supply at its source and in its distribution, the milk traders should themselves reassure the public by pasteurising all their milk in bulk before it is distributed; and several large firms, we believe, already adopt this practice. Its sufficiency, however, as a protection to the public is open to considerable doubt. The destruction of infective bacteria, if attained, is a clear gain. But unless sterilised or pasteurised milk is at once received in sterile receptacles, and there kept until used, other and substantial dangers may arise. The ordinary methods in which milk is conveyed, distributed, and stored in this country are quite unsuited for sterilised or even pasteurised milk. And it is noteworthy that in America, where pasteurisation in bulk is more usual than it is here, health authorities are energetically demanding that receptacles containing pasteurised milk should be labelled as to temperature and time of pasteurisation, and that commercial pasteurisation should be subject to rigid regulation and supervision.

KING'S COLLEGE HOSPITAL.—In their latest report the committee of the King's College Hospital Removal Fund, of which Lord Hambledon is chairman, announce that the contributions to the fund during the year ending August 31st, 1913, amounted to £24,121, not including £9438 promised but at present unpaid. Since the commencement of the appeal the committee have received a total sum of £382,114, of which £48,000 have been contributed by King Edward's Hospital Fund. In order to extinguish the debt a further sum of £100,000 is still needed.

Annotations.

"Ne quid nimis."

THE MOVEMENTS OF THE LARGE INTESTINE.

To the philosopher of the future, as he looks back upon the progress which has been made during the last few years in the study of the intestinal movements, there will be presented the strange spectacle of the growth of two schools of thought which, though working in apparent harmony, are yet as different as can well be imagined. The past year has seen the rise, and the very wide acceptance, of a doctrine of mechanical obstructions to the normal passage of the intestinal contents; it has also marked the free use of an eponymous nomenclature which has very little merit. That giant Vesalius has but one meagre and inconstant foramen in the cranial wall named after him, and even this, in these days of terminological reform, is like to be swept away; those with any love for the traditions of anatomy must therefore regard with horror the naming (however ephemeral the terminology is likely to be) of chance peritoneal bands and intestinal moorings after this one and that. We would not be so pessimistic as to look on these things as long-lived blots on anatomical terminology; but we would make protest against their coining. With the mechanical view in mind the alimentary canal has proved a happy hunting ground; a bend in the tube, a mechanical disadvantage, an obstructing band, an adhesion—all have been eagerly sought out, and a new terminology, mostly eponymous, has been thrust into the literature. Meanwhile, and more quietly, other work upon the passage of food along the alimentary canal has been carried out, and things only guessed at before have been patiently watched by means of the X rays. We have now a very complete knowledge of the movements which urge the food-mass onwards, and more than a guess as to the nature of the impulses which regulate these movements. In recent papers by Hertz and Newton[1] it is made abundantly clear that the ileum possesses the terminal sphincter which was claimed by Professor Keith, as an anatomist, more than 10 years ago; and further that this sphincter governs (as Keith suggested) the flow of contents from ileum to cæcum. It is now demonstrated that this sphincter is regulated by impulses connected with the passage of food into the stomach—the gastro-iliac reflex. Normal iliac stasis is therefore to be regarded as the outcome of this regulating mechanism; abnormal iliac stasis seems clearly due to some defect of this mechanism. Again, after the cæcum and colon have become filled by the passage of intestinal contents through the ileo-cæcal valve, movements of the large intestine are apparently produced by the stimulus of the entry of food into the stomach—the gastro-colic reflex—which in most individuals results in defæcation after breakfast, although the desire to defæcate may also be manifested after other meals. A theory makes a very powerful appeal, and the clinical support which it receives is undoubtedly strong; but the risk is lest it should be regarded as the whole story. Its apparent mechanical simplicity should be in itself a warning that it is not likely to be the complete explanation of what is

[1] See Journal of Physiology, Vol. XLVII. Nos. 1 and 2. 1913. (Two papers.) By Arthur F. Hertz and Alan Newton.

almost certainly a subtle vital process. The mechanical disabilities which intestinal movements are able to overcome, rather than the ready impediment of intestinal contents by bends, or twists, or turns, is the fact which strikes the observer when studying the intestinal canals of different vertebrate types. On the other hand, common experience compels a belief in some gastro-colic reflex—a reflex which may be abnormally sensitive in conditions of so-called nervous or lienteric diarrhœa, while the detection of the vital rôle of the ileo-colic sphincter is a remarkable vindication of the findings of the anatomist. We are, perhaps, too near to the period of the actual discussion to survey opposing views in their proper perspective, and there lies behind them more than mere academic discussion. To the questions—Is intestinal stasis a complaint which falls within the province of the surgeon or of the physician? Should we attempt operative interference with the alimentary canal? or Should we attempt to re-educate a neuro-muscular reflex, which from some cause or other has fallen below its normal activity?—no general answer can yet be given.

ANTS AS TRANSMITTERS OF TROPICAL DISEASE.

No suspicion until lately has arisen that the industrious ant might upon occasion act as the transmitting agent of infection to man. It was known that some species, such as the white ant, had very destructive tendencies in certain parts of the tropics, and that the bites of some large tropical ants caused a good deal of general disturbance, being attended with faintness and shivering and sometimes with temporary paralysis. It was also known that some savage races used the dried bodies of ants, beaten into a paste, as an arrow poison, but it is only of late that suggestion has been made that this insect might convey pathogenic bacteria to man. The ant is commonly found in and around the dwellings of people residing in the tropics. It is, indeed, a matter of difficulty to keep this insect away from foodstuffs in such houses, and it is equally difficult to keep the ant away from human dejecta when these are not properly disposed of. So that it cannot be doubted that the ant has the opportunity of carrying from infected excreta the specific organisms of disease to the food stored in human dwellings. Not long ago one writer drew attention to the possibility of the ant spreading anthrax. In 1908 Dr. Andrew Balfour, then at Khartoum, in his "Review of Recent Advances in Tropical Medicine," discussed the suggestion that ants might be to blame for carrying cholera infection from contaminated fæcal matter to human food and drink. His experience was that at Khartoum ants were more in evidence than flies, and that from their crawling habits and scavenging propensities they could play a considerable part in the conveyance of cholera and similar infections. Little or no experimental work, however, had been done to obtain proof that ants were capable of transmitting diseases to man; but in 1912 Dr. L. B. Bates, bacteriologist to Ancon Hospital in the Panama Canal Zone, undertook a series of experiments with the view of putting to the test whether or not the ant acted as a transmitting agent of such infections as enteric fever and bacillary dysentery. His results were published lately in the Proceedings of the Canal Zone Medical Association, Vol. V., Part I. His investigations were carried out with the large yellow ants which are found in and around the houses in the Canal Zone. He fed a number of these insects on bread soaked with cultures of B. typhosus for five days, killing and examining some of them at certain intervals, but in no instance was he able to recover the typhoid bacillus from the intestines of the ants. The experiment was carefully repeated with like negative results. He then tried to determine if the ant could carry the specific organisms on its legs or body, in a purely mechanical way, to human food. A number of the insects were dropped into a broth culture of B. typhosus and allowed afterwards to crawl out and walk over Petri dishes, the bottoms of which were covered with filter paper, at varying intervals up to 24 hours; after that they were placed on the media in Endo plates. The typhoid bacillus was easily found in every instance. This experiment was repeated several times, and in the majority of cases positive results were obtained. It is known that the body of the ant contains a certain amount of formic acid. Dr. Bates infers, therefore, that under such circumstances it would be almost impossible that any typhoid bacillus could survive for any length of time in the intestinal canal of the ant. He concludes that the ant under certain conditions is capable of becoming an active agent in the transmission of enteric fever or bacillary dysentery to man, but only in a mechanical way. The same is almost certainly true as regards cholera. It would be of advantage if further experimental work in this direction could be carried out.

FRACTURE OF THE PELVIS IN A CHILD.

FRACTURE of the pelvis in childhood is rare because of the smallness and elasticity of the bones and the suppleness afforded by the symphyseal and epiphyseal buffers. In the "International Encyclopædia of Surgery" Packard says: "Fracture of the pelvis is almost unknown in children. The youngest patient I remember to have treated was 16 years old." In the *New York Medical Journal* of Nov. 5th, 1913, Dr. P. G. Skillern has reported the following case. A boy, aged 7, was taken to hospital. While at play on the previous day he was struck by an empty lime box over the pubic region. Examination revealed an ecchymosis between the anterior superior iliac spines and the symphysis pubis and tenderness over the ossa pubis. There were no signs of injury to the bladder, and the child could walk without difficulty. Bimanual recto-abdominal palpation, in which the pubic arch was sandwiched between the examining hands, again elicited wincing and tenderness, but no unevenness of the bones, crepitus, or preternatural mobility. There was a small hæmatoma in the space of Retzius. A skiagram showed bilateral symmetrical oblique lines involving the bodies of the pubic bones, each starting at the upper part of the symphysis and extending downwards and outwards to the margin of the thyroid foramen 1·5 cm. below the pubic crest. On the right side the fracture line passed across the lower part of the thyroid foramen to involve the body of the ischium just above its junction with the tuberosity. On the left side the ischium was uninvolved. The child was placed on a fracture bed. These lines of fracture were in keeping with the following description by Packard: "When a crushing force is brought to bear on the whole pelvis the bone may give way at two or three different points. One or the other side may be specially acted upon. In any case, however, the pubis would

seem to yield first in its horizontal ramus, when there must be a fracture also somewhere between the symphysis pubis and the tuber ischii." In the present case the injury stopped short of crushing and displacing the bones. The absence of subjective symptoms was due to the subperiosteal nature of the fracture, there being even not enough displacement to involve the bladder. Perhaps it escaped because it is chiefly an abdominal organ in childhood. But for the ecchymoses and the wincing on examination arousing suspicion sufficient to resort to skiagraphy the fracture would have escaped detection.

METAPLASTIC BONE AND MARROW FORMATION IN VESSEL WALLS.

IN the *Cleveland Medical Journal* for November, 1913, Dr. H. O. Ruh has published an important paper on a subject which has not received from pathologists the attention it deserves—metaplastic bone formation in vessel walls. Radiography has recently brought to light many examples of calcification and ossification in unusual situations, especially in arteries and veins. Dr. Ruh reports the following case. A woman, aged 58 years, was admitted into hospital suffering from dyspnœa and swelling of the lower limbs. At the age of 30 years she had an attack of rheumatism, from which she recovered without cardiac symptoms, but during the last eight years she had suffered from cardiac distress. On examination mitral regurgitation and obstruction were found with failure of compensation. The urine contained albumin and a few epithelial cells. She died soon after admission. At the necropsy about 1000 c.c. of serous fluid were found in the peritoneal cavity, and the liver reached 4 cm. below the costal margin. The heart was greatly enlarged and weighed 675 grammes. The right auricle and ventricle were much dilated and formed the greater part of the organ. The mitral valve was reduced to a slit-like aperture by fusion of the cusps and fibrous thickening. The aorta throughout was thickened and scarred and showed numerous atheromatous plaques, atheromatous ulcers, and calcified areas. Below the cœliac axis the atheromatous process was especially marked. Just above the bifurcation a shelf of dense hard tissue with irregular edges projected into the lumen. On its upper side was a greyish-red thrombus which further occluded the already narrowed lumen. About 1 cm. above the bifurcation of the aorta was a pinkish-grey occluding thrombus firmly attached to the wall. This extended downwards into the common iliac arteries for a distance of 3 cm. in the left and 2 cm. in the right. On the right side the thrombus was evidently more recent than on the left; it was more pinkish and not so dense. On the left side the thrombus was completely organised, very dense, nearly white, and cut with much resistance. In fact, the vessel suggested a fibrous cord. The iliac arteries just below the thrombus were much sclerosed. There was also moderate general arterio-sclerosis. Microscopic examination of the aorta below the shelf mentioned showed great thickening of the adventitia and degeneration of the elastic fibres of the media. Around one-half of the vessel, partly in the media and partly in the intima, was an area composed of osseous tissue with large spaces containing red marrow in which all types of marrow cells were present. In the neighbourhood were large collections of osseous deposit. The bone showed a definite lamellar structure and numerous typical bone corpuscles. With high magnification a layer of cells resembling osteoclasts, and forming a membrane covering the osseous tissue, could be found. A number of scattered cases of heteroplastic bone formation can be found in medical literature. The following sites have been given: vessel walls, mucosa of the bladder, laparotomy scars, lung, pia and choroid plexus, dura, pleura, eye, stomach, liver, lymph nodes, heart valves, adrenals, and testes. More careful examination would probably show that the condition is commoner than is supposed. Kryloff estimates that in 15 or 16 per cent. of all cases of advanced arterio-sclerosis there is bone formation. In 1826 Andral described a case in which it was present in the aorta of a girl aged 8 years, and five or six cases in patients between the ages of 16 and 24 years. He also referred to a case of ossified temporal artery in an infant aged 15 months. Howse in 1877 found in an axillary artery a focus of bone. In 1866 Paul demonstrated at the Pathological Society of London a portion of a sclerotic tibial artery with a focus of osseous tissue in the intima. Considerable experimental work has been done on metaplastic bone formation. It has been produced in the kidney by ligature of the renal artery. Care must be taken in calling a process metaplasia, as the distinctions from various processes of growth are not so sharply defined as is generally supposed. Ziegler defines metaplasia as "that process by which a fully developed tissue is changed into another tissue without passing through an intermediate cellular stage." It is a well-known physiological process and occurs at all periods of life. The most common examples are the conversion of connective tissue cells into fat cells and of cartilage into bone. Such closely allied processes as heterotopia, in which there is a congenital or acquired snaring out of cells of a tissue with subsequent growth out of place, must not be confounded with metaplasia.

SLEEPING SICKNESS IN THE ISLAND OF PRINCIPE.

WE drew attention recently[1] to the hopeful attitude adopted by Professor John L. Todd, of Montreal, regarding the possibility of ultimately preventing the occurrence of human trypanosomiasis in tropical Africa, notwithstanding the somewhat gloomy opinions expressed by some other experts upon the subject. Since then we have seen a report[2] on sleeping sickness in the island of Principe, written by Surgeon-Captain Bernardo F. Bruto Da Costa, chief of a commission appointed by the Portuguese Government in 1912 to investigate the prevalence of the disease in the colony. This report gives a sanguine view of the situation, and goes so far as to say that if the means indicated by the commission were provided by Government the malady could be eradicated within a year. It has, however, to be borne in mind that the problem is less difficult in Principe, an island some distance from the African mainland and with a population numbering not

[1] THE LANCET, Dec. 13th, 1913, p. 1709.

[2] Sleeping Sickness in Principe. By Surgeon-Captain Bernardo F. Bruto Da Costa, Chief of the Sleeping Sickness Commission. Translated by Lieutenant-Colonel J. A. Wyllie, I.M.S. (retired), Associate, Centro-Colonial, Lisbon. London: Baillière, Tindall, and Cox. 1913. Pp. 90. Illustrated. Price 2s. 6d. net; postage 3d. extra.

quite 5000, than it is in other parts of West Africa where re-importation of infection is easy and frequent. The chief industry of the island is the cultivation of the cacao plant, this being done mainly by imported labour. For many years sleeping sickness has been prevalent in Principe, which is about the size of the Isle of Wight, situated in the Gulf of Guinea, 135 miles from Fernando Po and nearly the same distance from the West African coast. It is stated that at one time the disease threatened the extinction of the entire population. Little, however, has been done until lately to check the spread of the infection, the planters and the natives having been equally apathetic. The special measures recommended by experts previously sent to deal with the malady were allowed, as Captain Da Costa says, to remain on paper "to the grave disgrace of agriculture and humanity." The late commission began its labours in August, 1912, and although at first they met with the same passive resistance as their predecessors, in time they convinced the planters, who are now eagerly coöperating with the staff of the commission. The report deals with ten months' work done by Captain Da Costa's "official brigade" in conjunction with the planters. The "official brigade" comprised 150 men, imported labourers, along with some convicts, who, however, were carefully trained to carry out their duties. The action taken included the draining of swamps and swampy land, the felling of timber in places where shade was afforded to the tsetse flies, the eradication of secondary growth of jungle-scrub, the clearing of the beds of streams from obstructions, the slaughtering of pigs and other animals running wild on which the glossinæ were found to feed, and the trapping of these flies by means of men wearing black cloaks or coverings on which had been smeared birdlime or some other sticky stuff. This plan for trapping tsetse flies was devised some years ago by a Principe planter named Maldonado, and we described it in THE LANCET of Feb. 12th, 1910. In addition to the above measures, medical inspection of the workpeople of the island was carried out in order to discover unrecognised cases, 125 such instances being brought to light. The blood of a number of domestic and other animals was examined to ascertain if trypanosomes were present; 52 of the animals were found infected, and they were at once slaughtered. During the ten months' period that the "official brigade" was at work, 235 wild pigs were killed, 251 "lagaias," and 272 dogs; besides these, 300 other dogs were destroyed in the small urban district of Sao Antonio which Captain Da Costa found in an extremely insanitary condition. Some attempt was made to protect domestic animals against trypanosome infection by administering injections of atoxyl, but this plan turned out to be inefficacious. The number of tsetse flies caught in the above-mentioned period by Maldonado's method was 110,691. Directions were given that anyone bitten by a glossina fly should at once receive a hypodermic injection of atoxyl. All persons proved to have trypanosomes in their blood were immediately isolated. After these measures had been in operation a few months there was a marked decrease in the number of cases of sleeping sickness and in the number of tsetse flies observed upon the plantations, amounting in some instances to entire disappearance. Captain Da Costa, as has been said, expresses the confident opinion that if the measures described above were fully carried out and the "official brigade" increased in number, sleeping sickness could be eradicated in Principe within a year. Principe, it may be added, is characterised by some authorities as "the garden of Africa," owing to its fertility and the richness of its vegetation. It is a pity that Captain Da Costa has not given us statistics of the incidence of sleeping sickness in the island in previous years for comparison. He, however, states that during the ten months' period ended May, 1913, 362 persons were under treatment for the disease.

PERFORATION OF THE STOMACH IN TYPHOID FEVER.

ULCERATION of the stomach in typhoid fever is very rare. Perforation is still rarer; indeed, it is difficult to find a case on record which will bear examination. Hence the importance of the following case reported at a meeting of the Société Médicale des Hôpitaux of Paris on Nov. 14th, 1913, by M. A. Bergé and M. Barthélemy. A man, aged 21 years, was admitted into the Broussais Hospital on April 30th, 1913, suffering from fever and catarrhal pharyngitis. On the following days the temperature rose by steps from 100·4° to 102·2° F. On May 10th diarrhœa, rose spots, and slight albuminuria appeared. The spleen became slightly enlarged, and on the 20th the typhoid bacillus was cultivated from the blood. But the serum reaction was persistently negative. From the 15th the patient complained of pain in the left hypochondrium. The pain lasted for a fortnight, with variations in intensity, and then disappeared. There was no vomiting or other gastric symptom. The attack ran a usual course, except that the diarrhœa continued for a long time. The temperature progressively fell and became normal on June 3rd. The patient took nourishment well and gained strength, but did not put on flesh. He was discharged on June 30th. On July 3rd he was readmitted in a state of profound collapse, with cadaveric pallor of the face, cyanosis of the extremities, and subnormal temperature. On the 4th there was marked dyspnœa, a thready pulse of 104, and a rectal temperature of 96·8°. All over the chest bronchitic râles were heard. The abdomen was slightly distended, supple, and was not painful. The patient was almost unconscious, and passed abundantly yellow diarrhœic motions. He did not vomit, and died in a state of collapse. At the necropsy the body was found extremely wasted. The peritoneal cavity contained 200 grammes of sero-fibrinous liquid. The intestinal coils looked almost normal. On the ileum, about three or four centimetres from the cæcum, was a reddish zone with slight fibrinous exudate but no perforation. Further on the intestine was attached to the peritoneum lining the pelvis by a slight fibrinous cord. Inside the intestine at these two points were healed ulcers. Other healed ulcers were also found. The mesenteric glands were swollen, and one contained thick greenish-yellow pus. The spleen was very large and soft, and at its hilum was an abscess of the size of a mandarin orange. It was limited anteriorly by the posterior surface of the stomach, externally by the spleen, and posteriorly by peritoneal adhesions. On opening the abscess by removal of the spleen an infundibuliform depression was seen on the stomach, which led to a perforation. Viewed from inside the stomach the perforation was round and smaller than a 50-centime piece. Its borders were regular and appeared to be cicatrised. The right pleura

contained about 100 grammes of hæmorrhagic fluid. The bases of the lungs were congested. It might be suggested that the gastric lesion was an ordinary round ulcer which had perforated during the course of typhoid fever. However, the appearance of the ulcer and the absence of hæmatemesis and other gastric symptoms were not favourable to this hypothesis. It might also be suggested that an extra-gastric abscess originating in a lymphatic gland or in the spleen had perforated into the stomach. Against this view was the integrity of the spleen and the absence of a probable cause of such an abscess. It appeared that a typhoid ulcer of the stomach had perforated and produced the abscess, and that the condition ran a latent course before producing the final collapse. Perforation of the stomach in typhoid fever is so rare that Professor Chauffard in his erudite Thèse de Paris does not mention it. Millard has reported a case of typhoid ulcer of the stomach involving all the coats except the peritoneal which was transparent at some points.[1] M. Bergé and M. Barthélemy could find recorded only one case of gastric perforation in typhoid fever. Mazetti[2] has reported the case of a man who was admitted into hospital on July 18th, 1907, suffering from typhoid fever which ran an ordinary course except for persistent pains in the left flank, which began on July 30th. Apyrexia and convalescence began on August 11th, but on Sept. 7th an attack of subacute peritonitis occurred and rapidly proved fatal. At the necropsy a rounded perforation of the size of a two-centime piece was found on the posterior surface of the stomach near the pylorus. Its borders were abrupt and not indurated. There were several other gastric ulcers which were more superficial.

THE SHORTAGE OF ANATOMICAL SUBJECTS.

PROFESSORS of anatomy and teachers of operative surgery have for years been complaining of the difficulty of obtaining "subjects" for dissection, and beyond all doubt the teaching both of anatomy and of operative surgery has long been hampered by a deficiency in the supply of bodies. Twenty years ago the supply was beginning to fall off sufficiently to be felt, and it has steadily diminished year by year ever since. Things have got to such a pass now that the Royal College of Surgeons of England has been moved to action, and has pressed the matter upon the attention of the Home Secretary, but so far no concrete proposals for solving the problem have been put forward. The attention of the lay press has, however, been gained, and reminiscences of Burke and Hare have naturally undergone resurrection. This way prejudice gathers; and politicians are not likely to go out of their way to bestir themselves in a matter which can scarcely bring them votes in any event and is liable to be used as a party catchword against them. The public, too, is little moved by reasoning, however sane and cogent it may be, directed to showing the advantages of anatomical knowledge in physicians and surgeons, or the disadvantages of a lack of it. The medical profession must expect no help from without, but must produce its own schemes for increasing educational facilities in this respect and must be prepared for strenuous opposition from sentimentalists even to the most reasonable and necessary suggestions. In these circumstances teachers of surgery and the examining corporations in that science might well consider a plan which was suggested a year or two ago, we believe in America, and is said to have worked well. The adoption of this expedient would set free every year, and leave available for the teaching of anatomy, a considerable number of bodies which at present are used up in operative surgery classes and examinations. Briefly, the idea is to perform representative abdominal operations upon the pig under full anæsthesia, with complete aseptic precautions, the animal being treated with every care and attention. As matters stand, the operations practised in classes of operative surgery are largely those which Listerism has long ago rendered rare or obsolete; while the common procedures of the modern operating theatre are perforce omitted altogether from the course. The American scheme would not only do something, though not perhaps enough, to remove the difficulties of the teachers of anatomy, but would in addition enhance the value of training in operative surgery, which at present is not so great as it should be. There would, no doubt, be determined opposition to the necessary modifications of the vivisection laws, but at least here is a constructive contribution towards the solution of a difficult problem. We see its disadvantages as clearly as its advantages.

[1] Bulletin de la Société Médicale des Hôpitaux de Paris, Dec. 8th, 1876.
[2] Riforma Medica, Napoli, 1908, vol. xxiv., p. 487.

INSANITY AND AMENORRHŒA.

SINCE the discussion of the connexion between amenorrhœa and insanity at a joint meeting of the Obstetrical Section of the Royal Society of Medicine and the Medico-Psychological Association more than a year ago, attention has been directed afresh to the question whether there is or is not a form of insanity so closely connected with amenorrhœa that re-establishment of the menstrual function cures the mental disorder. In the *Australian Medical Journal* of Nov. 15th, 1913, the recent literature of this subject is summarised by Dr. J. W. Dunbar Hooper, who reports a somewhat remarkable case in point from his own practice. The patient when he first saw her was 21 years old. She was anæmic and constipated, and had suffered from melancholia for three years, during which time she had menstruated twice only, very scantily and with great pain. After more than 12 months of treatment, which included curetting, she was placed in an institution, where she spent a year. She was then found to be suffering from religious mania with amenorrhœa, was occasionally vicious, and at such times refused food. It was decided to remove an ovary and to substitute for it a more normal organ taken from a sane person. A hysterectomy upon another patient provided the required material, which after removal was placed in Ringer's solution at blood heat. Four and a half hours later the abdomen of the insane woman was opened. Both ovaries were very small, hard, pale, and cirrhotic. The more abnormal of the two was removed, the broad ligament on that side split, and the new ovary, cut into three slices, was embedded in the nest thus provided. Recovery was uneventful, and 24 days after the operation a normal, painless, profuse menstruation took place. The mental condition improved rapidly, and in six months the patient was dismissed to her home. She was then menstruating regularly, had put on 6 lb. in weight, and was exceptionally bright and happy. She declared her intention of doing her utmost to repay her parents for the trouble and expense of her treatment; in a word, her insanity had entirely vanished. Dr. Hooper

avows his intention of reporting again on the patient's condition in a further year's time, and it will be of interest to learn whether the cure is permanent.

NEURASTHENIA IN TROPICAL CLIMATES.

THE Emperor Babèr, who invaded India from the north early in the sixteenth century, has noted in his memoirs that the tropical climate produced a depressing effect on his followers, causing a loss of energy and power of initiative. He gave them leave to return to the cooler northern regions to recuperate, he himself remaining in the plains of India to continue his conquests. For the great majority of our countrymen who live and work in or near the tropics there is no doubt that continued residence under the conditions of temperature and humidity that there prevail leads to a deterioration of health, for which periodic removal to a cooler climate is the surest, if not the only, remedy. Sir R. Havelock Charles has recently, in an address to the Society of Tropical Medicine and Hygiene, set forth an explanation of this deterioration. He finds it in the old saying of Cuvier that "the nervous system is at bottom the whole animal, and the other systems are only to serve it"; and considers that the conditions of continuous residence in hot countries influence the nervous system of the European, both directly and also indirectly, by producing anæmia, imperfect metabolism, and affections of the alimentary and other systems. The condition known in one part of India as "Punjab head," in another as "Bengal head," and so on, is practically the same everywhere. Alteration of temper, inability to sleep, disinclination to take responsibility, procrastination, loss of power of concentration, sometimes put down to an attack of "liver," occur in men of strenuous activity, and not suffering from any organic disease; but there develops a congeries of mental and sensory disturbances, generally accompanied by signs of defective metabolism. Moreover, such a condition of what is really a form of nerve exhaustion lowers the vitality and "natural immunity," or power of resistance to disease, and so renders the subject more susceptible to infection. Sir Havelock Charles instances the successive migrations to India of various races, and shows how the Aryan race, coming from an elevated, cool country to the warm, rich lands lying along the great Indian rivers, deteriorated in energy and character. The last Hindoo kingdoms of Bengal and Behar came to an end because of the nervous exhaustion of the race, a prey to the climate, "corrupted by the departure of the people from the customs and practices of their ancestors." So with the Moghuls at Delhi. At first kept alive by a continuous stream of fresh blood percolating from Central Asia, when Afghanistan was cut off immigration stopped and deterioration set in. The Turkoman and other races in Afghanistan maintain their virility; the descendants of similar races in India have lost it. The lesson is that in our own case a similar result would happen if there were not frequent interchange between home and India—not a permanent settling in that country for generations, but a succession of fresh waves of immigration to make up for the wear and tear due to climatic influences. So the Chinese in Singapore and Calcutta maintain their excellent qualities by continuous importations of fresh blood. Sir Havelock Charles quotes Bacon's dictum as holding good for the tropics: "The fit man and the right man is he who has constancy of mind, so that he enjoys the good without disdain and endures the bad without impatience." That is, an individual not liable to neurasthenia—a condition most likely to arise under the usual concomitants of heat and moisture. Insanitary conditions may be rectified, and many tropical diseases banished. But the heat, the sunlight, the climatic conditions cannot be changed; and a stock or race evolved to suit the environment of a temperate climate cannot be settled permanently in a tropical or subtropical climate. Prolonged residence in such a climate produces not only physical but mental deterioration, associated with anæmia. Various diseases due to specific parasites may be controlled in certain cases, as Panama has demonstrated, but in Sir Havelock Charles's opinion this cannot be cited as applicable to the continent of India. Apart from parasitism, there are the climatic conditions, and these bring about the deterioration just mentioned. It may be thought that hardly enough credit has been given to the much more sensible and healthy manner of living practised by most Europeans in India at the present day than was customary a generation or so ago. Moderation in eating, particularly in flesh food, temperance in regard to alcohol in every form, increased bodily exercise, and perhaps a more generally outdoor life, have certainly enabled Europeans to live healthy and enjoyable lives in places formerly considered "deadly"—e.g., Calcutta. But this does not prove that the race can be perpetuated in health and vigour in such a situation. Some of the points in Sir Havelock Charles's interesting and suggestive address have been touched on; but the paper itself should be studied in detail by everyone interested in the subject.

A NEW X RAY TUBE.

THE New York correspondent of the *Times* in the issues of Dec. 31st and Jan. 1st last gives an account of a new method of X ray production that may have a profound influence on the future of radiology. The essential feature of the new discovery lies in the details of construction of the X ray tube. It is claimed that the quality of the radiation with the new tube is under complete control, and, further, that the efficiency of the tube as a transformer of electrical energy into radiant energy is greatly increased. If these things be so we may safely predict that the whole science of radiology will enter upon an entirely new phase and its usefulness be vastly extended, but it is necessary to say these things with much reservation, as the evidence before us is still meagre. It is, at any rate, quite probable, or even certain, that improvements in technique will be arrived at in radiology; so many observers are working in this direction, recognising that in existing conditions not only is the best X ray installation very inefficient, but, what is worse, the quality of the radiation is more or less constantly varying. This drawback has done more than anything else to retard the progress of radiology, and while the effect is not so noticeable in radiography of the extremities, it becomes a serious matter when investigating the thorax and abdomen. Even more seriously has the weakness of the modern X ray tube militated against the progress of so-called instantaneous radiography. Though the tube may be of sufficient mechanical strength to withstand the enormous strain, the vacuum may be so profoundly altered by a single exposure as to render it

practically useless. So far as our information goes the chief points of interest in the new discovery are the substitution of tungsten for other metals in the construction of *all* the electrodes of the X ray tube and *metallic* ions for those of atmospheric or other gases, as used in existing tubes. Now metallic tungsten can be prepared in two forms, light and heavy. Mr. Coolidge, the inventor of the new tube, seems to have found it better to employ heavy tungsten for the anticathode and light tungsten for the cathode. These electrodes, when heated in vacuo, give off ionic particles to form the cathode stream necessary for the production of the X rays. So far no information is forthcoming as to how the heating of the electrodes is managed, presuming that this is necessary for the action of the tube, nor is there any explanation afforded of the steadiness and control of the radiation which result. The power of the new tube is stated to be such that a full dose can be given in 15 seconds, and that the thicker parts of the body can be radiographed 100 feet from the tube. If these things be so it is highly probable that the tube has to be energised by an installation of much greater power than any in ordinary use. As a matter of fact, we know of one installation having an output of 20 kilowatts, or from five to ten times that of the so-called powerful installations at present employed, and it is conceivable that a tube constructed on existing lines would give results approximating those claimed for the new invention, provided it were energised with such an installation. We await further details with great interest, being fully alive to the importance of the claims put forward for the new invention, even to the extent of hoping that its advantages have been under rather than over-estimated.

THE MEDICAL CHARITABLE SOCIETY FOR THE WEST RIDING OF THE COUNTY OF YORK.

SELF-HELP, unlike self-praise, is rightly esteemed to be a strong recommendation; and mutual help, it cannot but be believed, is a stronger one still. The benefits and blessings of self-help and mutual help are clearly illustrated by the report and statement of accounts for the year ending June 30th, 1913, of the Medical Charitable Society for the West Riding of the County of York.[1] This valuable society was founded in 1828, and it is pleasing to note that it is still vigorous and flourishing. Admirably decentralised into a number of districts under local stewards for the collection of subscriptions and of new members, the rules show a businesslike attitude such as befits the sphere of the society's labours. Any regular medical practitioner resident in the West Riding is eligible for membership, provided he is in good health, is under 40 years of age, and has not been in practice in the West Riding for more than 15 years without joining the society. The confidence of the profession in the management of the charity is shown by its large membership and by the high standing of its officers; and that of the general public by the fact that legacies and donations are not infrequently received from outside the profession. Further, we note with very great pleasure that the vicars of Leeds and Bradford handed over the offertories at special services on St. Luke's Day. The financial statement is exceedingly full, and discloses a most satisfactory position. The policy of absolute frankness with regard to investments and similar matters is, we are convinced, essential to the success of all societies such as this; and it is pleasing to acknowledge the thoroughness with which this policy is followed out in the West Riding society's balance sheet.

[1] THE LANCET, Jan. 3rd, 1914, p. 63.

SARCOMA OF THE HUMERUS AFTER WIRING.

A REMARKABLE case, reported in the *Journal of the Royal Army Medical Corps* for December, 1913, by Captain W. D. C. Kelly, of sarcoma following the treatment of a fractured humerus by wiring suggests two or three obvious but not easily answered questions. The patient, a young man, sustained an oblique fracture of the left humerus in May of last year. Treatment by splints and extension failed to control the fragments, as was shown by an X ray plate, so eight days after the accident the bones were wired together. A fortnight later the man was about to be discharged when he fell down some steps and refractured the same bone just below the original break. This fracture united satisfactorily in splints. Three months later the patient reported sick again for enlargement of the arm, first noticed a fortnight previously. Up to this time the arm had borne severe usage without difficulty. The mass was at first regarded as callus, but it enlarged so rapidly that it was again radiographed, and sarcoma was diagnosed. Under anæsthesia a piece of the growth was removed, and was reported as spindle-celled sarcoma. A fore-quarter amputation was performed, followed by a good recovery. The questions which Captain Kelly propounds are: Was the sarcoma present at the time of the fracture? and, Does the presence of a foreign body in bone, such as a wire, predispose to sarcoma? To the first question he is inclined to reply in the negative, because the X ray plate did not show it, and because the fracture united. To the second question he discreetly makes no reply at all; this is clearly a statistical matter which registrars of large general hospitals might profitably investigate. Lastly, it is of interest that the growth was spindle-celled, although endosteal.

Dr. F. M. Sandwith, Gresham Professor of Physic, will deliver four Gresham lectures on Jan. 20th, 21st, 22nd, and 23rd at the new Gresham College, Basinghall-street, London. The lectures, which are free to the public, will be delivered at 6 o'clock, and Dr. Sandwith has selected as his subject, "Medicine: Old and New." The first lecture deals with medicine in Sir Thomas Gresham's day; the second and third will set out the leading features of the recent International Congress of Medicine; and the fourth will illustrate modern biological science with the assistance of cinematograph pictures.

ON Jan. 26th Surgeon G. M. Levick, R.N., will deliver at the Royal Society of Medicine a lecture entitled "The Experiences of Captain Scott's Northern Party from a Medical Point of View."

ROYAL SANITARY INSTITUTE.—A course of lectures to assist school teachers and others entering for examinations in school hygiene and for women health visitors, tuberculosis visitors, and school nurses will begin on Monday, Feb. 16th, at 7 P.M., at 90, Buckingham Palace-road, London, S.W.

HEALTH TEMPLES IN ANCIENT GREECE AND THE WORK CARRIED ON IN THEM.[1]

BY RICHARD CATON, M.D. EDIN., LL.D. EDIN. & LIVERP., F.R.C.P. LOND.

THE subject on which I have the honour of speaking to you this afternoon is of such wide range that in the time allotted I can only deal with it in bare outline. While knowledge as to the health gods, the shrines of healing, and the practice of medicine generally in ancient Greece has grown rapidly during late years, still there is much that is vague and uncertain as regards origin and the detail of methods. Egypt seems to have preceded Greece in medical lore and also in the superstition which accompanied it. How far Greece learned from Egypt it is hard to say, but there can be little doubt that many Egyptian methods were transported into Greece. The reference in the fourth book of the Odyssey to the superiority of Egypt in medicine is one proof of this; the adoption by the Greeks of the strange custom of incubation, long practised in Egypt, is another. In the dim twilight of Greek history Apollo was in some vague and distant way a healer. But by degrees minor deities who specialised more definitely in medicine took his place; they mostly were deified men, and of some of them I wish now to speak to you.

The Health Temple of Amynos.

The first I refer to, viz., Amynos, has been for centuries utterly forgotten, and indeed there is no reference to him in Greek literature until a later date, and then, curiously enough, only in the writings of the Christian Father Eusebius. His ancient cult was only rediscovered a few years ago. Amynos was an Athenian god of healing. His name doubtless comes from the Greek word *ἀμύνειν*, to protect, guard, defend, help. He was the helper and protector of the sick. When Professor Dörpfeld excavated the region of Athens between the Areopagus and the Pnyx he laid bare a part of the city forgotten and grass-grown for many centuries, containing streets, houses, and shrines, and among them the Amyneion or precinct of Amynos. Here I show you a ground plan of the region portraying small houses, narrow streets, water-pipes, and sewers. The Amyneion is an irregular area bounded by a wall with foundation of hard blue limestone, having a temple or chapel at its eastern side. In this plan of the precinct you see an altar or base of an image in the centre of the temple, also a sacred well. Many inscriptions were found.

Here is an attempt at a restoration of precinct and grove and of the ancient temple. Its date is best judged by the pottery, Attic black figured, proto-Corinthian of 700 B.C., and lowest of all Greek geometrical pottery of 900 or 1000 B.C. were found. The temple at that date would have a stone foundation with walls of sun-dried brick covered with cement. The colonnade and pediment, if existing, must have been of wood, the columns formed of rough pine trunks. No stone drums of column nor any parts of a stone frieze have been found. Many inscriptions of later date were discovered. The cult of Asklepios came to Athens about 420 B.C. Inscriptions are mostly to Amynos and Asklepios, and sometimes to them and Dexion (Sophocles). Fragments of marble snakes are found, and numbers of remains of sculptured figures and ex-votos. Here are some examples. Asklepios seems to have been quite secondary to Amynos in the shrine, and up to Roman times Amynos holds his pre-eminence. Was incubation practised here? We have no information. A second foundation has been found which possibly was the wall of a shed for incubation. Nor is anything known about baths, drugs, or methods of treatment. But treatment seems to have been greatly valued, if we may judge from the inscriptions and ex-votos.

The Health Temples of Amphiaraos.

Secondly, I wish to speak of the precinct of Amphiaraos near Oropus in Attica. This was the chief sanctuary of the god, though others existed, as at Rhamnus, Argos, and Sparta. In a pleasing glen, well clothed with pines, planes, and oleanders, through which a stream flows and in which many nightingales lift their voices, the shrine was built. Amphiaraos, a son of Melampus or Apollo, was a prehistoric warrior and a hero, one of the Seven against Thebes and one of the Argonauts. When flying from his enemies the earth opened near Oropus and swallowed up Amphiaraos and his chariot. Why he should have become a great healing god it is hard to say.

On the north-west of the stream on a flat strip of ground stand the remains of the sanctuary. Most to the west are the ruins of the Temple of Amphiaraos, a building 95 feet long and 43 wide, having a broad columned portico at the east end, six columns between antæ. The cella had three aisles, separated by rows of columns. At the south-west end was apparently a small porch 8 feet by 5. A large square base stood near the centre of the cella, on which no doubt stood the great image of Amphiaraos—part of a colossal arm found was doubtless part of the figure—it was rather nearer the eastern end than the west. Probably the temple was not hypæthral, for if so rain would fall on the god; louvres more probably lighted the cella. In front of the temple stood a large altar 28 feet long and 14 broad, built of limestone. It was dedicated to several gods. Three long curved steps are seen on the north of the altar, on which no doubt worshippers stood or sat. The sacred spring rises a few feet south of the altar, and was used for special purposes only (not for washing hands nor for purification). Amphiaraos rose as a god from this spring—hence its sanctity. North of the temple and altar stood a large number of pedestals bearing statues.

North-east of the temple is a large stoa 360 feet long and about 36 wide. It has an open Doric colonnade of 49 columns on the south-east side, the other three sides having solid walls. At each end is a chamber about 24 feet wide, and between them a long space of 310 feet (gratings in separation walls). A central line of 17 Ionic columns divided the stoa into two aisles. A marble bench ran along the back wall. The inner face of the wall was stuccoed and painted. Traces of painting still remain. This was the abaton, enkoimeterion or ward; the women occupied the western end, the men the eastern. Behind the colonnade, excavated from the hill side, is the theatre, with circular chorus space about 40 feet wide. The stage was about 40 feet by 20. North-east of the abaton or ward is a series of bath rooms, ten in number, dating from the third century B.C., but Roman

[1] A paper, illustrated by 60 lantern slides, read before the Section of the History of Medicine of the Royal Society of Medicine, on Dec. 17th, 1913.

alterations are evident. Two rooms have a hypocaust. Men and women had separate rooms.

The inscriptions indicate that the sanctuary was founded at the end of the fifth century B.C., and that it was closed during winter. The priest was obliged to be present not less than ten days in each month and never to be absent more than three days at a time. The nakaros or sacristan was to attend regularly to his own duties. Any patient misbehaving might be fined five drachmas. On admission each patient paid a fee of not less than nine obols. The priest, when present, must pray over the victims and put their flesh on the altar. The shoulder of every animal sacrificed, and in some cases both shoulders, were given to the priest, also the skin was ultimately his property. The patients might eat most of the flesh of the sacrificed animal, but no part of it might be taken beyond the precinct. The nakaros wrote down all the names and addresses of the sick. Before incubation each patient sacrificed a ram, and he used its skin as a bed, lying upon it in the abaton. Then incubation commenced, and he nightly awaited dreams and visions of the god.

Whether or not any drugs were given, no one knows. A special diet with occasional abstinence was enjoined—fasting from all food for one day and from wine for two. No beans were allowed. When recovery took place the convalescent dropped gold or silver coin into the sacred well (which offering presumably was subsequently abstracted by the priest). Models in gold or silver of the diseased organ or limb were suspended in the temple near the figure of the god. Many gold and silver vessels and ornaments were given. There was a festival of the god every fourth year. That is all that is known.

The shrine of Trophonios of Lebadea near Thebes had a lesser vogue for cure of the sick. The methods were somewhat the same: incubation and sleeping on the skin of a black ram.

Asklepios: the Temple at Epidaurus.

It is difficult to date the rise of the cult of Asklepios—probably it was later than that of Amynos—but it dates back to Homeric times. Tricca was probably its source, but Epidaurus the great centre where it chiefly flourished and whence it spread to all parts of Greece, Magna Graecia, and Rome. The site of the Hieron was six miles inland from the town of Epidaurus. At the time of its greatness an extensive precinct occupied the beautiful valley extending from the hill Titthion, where Asklepios was suckled by a goat, to Kynortion, on which stood the Temple of the Maleatean Apollo. Here is a rough bird's-eye view of the precinct as seen from the south—a splendid array of temples, stoæ, a great theatre, a stadium and grove. Here is the gateway with well for ceremonial purification, and the northern boundary wall. Here is the central temple of Asklepios, built in the fourth century B.C. The eastern façade presented a richly decorated and coloured scheme. The eastern pediment represents a combat of Greeks and Amazons, the western a conflict with Centaurs—Victory on the apex, and Nereids as acroteria; an elaborate ivory door. A side view of the temple shows the works of art adjacent to it, and behind it a part of the abaton. A sketch of the interior shows the splendid gold and ivory figure of the god with a golden serpent and a temple dog. Chryselephantine sculpture is very beautiful; the ivory, however, tended to crack, as was found at Athens and Olympia. But this great figure of Asklepios never required to be moistened with oil or water, as did the others, for the god of physic we may presume knew how to preserve his own integument. Only the floor of this temple and fragments of its decorations remain.

The abaton, or enkoimeterion, or hospital ward was employed probably half for men and half for women. On the south it has an open colonnade. So whatever other therapeutic agencies were employed there is no doubt that pure fresh air was enjoyed by the sick who occupied it. At the west end it was two storeys in height. Here incubation took place, the sick awaited the personal aid of the god or of the serpents, or they hoped for dreams or visions guiding them as to the best treatment for their several ailments.

Here is the Tholos or Thymele, an extraordinarily beautiful building of white marble coloured in parts. It was the most splendid circular building ever erected by the Greeks, dating from the third century B.C., built by Polykleitos the Younger. It was Doric externally, Corinthian within. Within were two celebrated paintings, Methe (drunkenness) and Eros, suggesting the relation of Dionysus and Aphrodite to the ailments which afflict mankind. There are various opinions about the function of the Tholos. Some think it was the sacred well. The foundations are curious, a dark labyrinthine basement, which I think cannot have been a water-tank, because, firstly, it was not cemented and would never have held water; secondly, there is no spring nor conduit leading to it; thirdly, the word Thymele means a sacrificing place; and fourthly, Pausanias speaks of the Tholos and the sacred well as entirely distinct. I have little doubt that it was the home or lair of the sacred serpents; in the vaults beneath they dwelt and bred in numbers, and from here they were sent to the numerous asklepieia all over the ancient world. The snakes would ascend to the floor of the tholos, where bloodless sacrifices were offered to them, and where the sick gave them the honey cakes, popana, and other sacrificial delicacies they were fond of.

[Dr. Caton then exhibited a lettered sketch of the Temple of Artemis Hekate.]

On the side of the hill Kynortion is seen the theatre, which was built in the fourth or fifth century B.C. by Polykleitos. Pausanias tells us it is the most interesting of the Greek theatres of his time. It certainly is one of the most beautiful of those existing to-day. The koilon or auditorium consisted of 55 rows of marble seats, capable of seating, it is said, 12,000 spectators. The chorus space is circular. The stage was 11 or 12 feet above the chorus space. The acoustics of this theatre are perfect; a loudish whisper on the stage is heard in every part of the auditorium. How many thousands of people have here listened to the plays of Æschylus, Sophocles, or Aristophanes!

Ceremonial Rites.

Vast numbers of the sick came here from all parts of the Greek world and beyond it. They lodged doubtless in the great hostel and in tents; those who were undergoing incubation of course slept in the abaton. At times—as, for example, at the festival of the Megale Asklepieia—thousands came who merely wanted a holiday, just as they came to the Isthmian or the Olympic Games. The

patient on arrival underwent ceremonial purification, then paid his fee and arranged with one of the hieromnemones about his accommodation. He would walk in solemn procession to the temple with singing of sacred pæans, with music of lyre and double flute, and burning of incense. He would enter the Tholos and, if I am correct in my theory, offer bloodless sacrifices to the snakes, feeding them with honey, cakes, &c. He bathed in the sacred fountain, performed certain rites, and offered his sacrifices. Priests and physicians probably arranged his diet and treatment. At night he enters the abaton, bringing his bed clothing, and reposes on one of the couches. At nightfall the nakoros lights the lamps. The priest enters and recites the evening prayers to the god. Here is one that has come down to us in the writings of Ælius Aristides, a priest of Asklepios. "O ye Children of Apollo, who for many in past time have stilled the waves of sorrow and shown a light of safety for those who travel, be pleased to receive our prayer which ye inspire in sleep and vision. Order it rightly, we pray you, according to your loving kindness. Preserve from sickness, give the body such measure of health and strength as may enable it to obey the spirit within; that our days may be passed in vigour and in peace." Silence was then enjoined, the lights put out, and the priest commanded all to fall asleep and hope for guiding visions from the god. The serpents would probably visit the sick. Their visits were most welcome. These serpents were of course tame and harmless. The phrase in the inscriptions ἴασατο τῇ γλώσσα refers to their habit of licking an injured part.

The Records of Miraculous Cures.

The inscriptions speak of the god often appearing to the sick, of miraculous cures and of visions. Here follow examples. Hermodikos was paralysed. In his sleep the god told him to go out on to the hill side and bring in the largest stone he could find. He brought it in and it now lies before the abaton. The stone it is believed lies there to-day, but no man is strong enough to lift it. A man suffered from a malignant sore on the foot. While sleeping a serpent licked the foot with its tongue. The sore was at once healed. Hermon of Thosos was blind. His sight was restored by Asklepios, but Hermon did not send the fees he had promised on his return home, so the god again made him blind. He came back to the hieron with the fees and was again cured. A man had an abscess in the abdomen. In a dream the god ordered his servants to hold him while he (Asklepios) opened the abdomen, cleared out the abscess, and sewed up the wound. When the patient awoke a great pool of blood was on the floor of the abaton, and he was cured. A great number of such inscriptions were fixed on the wall of the abaton.

In later times superstition had a less share and science a greater one in the work of healing. We read of the priests using reasonable and useful methods of treatment: diet of a plain and simple kind, hot and cold baths, poultices, various medicaments such as hemlock juice, oxide of iron, hellebore, squills, lime-water, and drugs to allay pain, active gymnastic exercise, friction of the skin, and counter-irritation. Bleeding was practised, as shown in this vase-painting, and surgical methods were in use, for reliefs of surgical instruments exist.

A Cruel Superstition.

Doubtless many of the sick benefited greatly, but some incurable cases came for help, and here a difficulty arose. Neither birth nor death was permitted by the Greek religion to occur in the precinct of a god. If any sick man failed to improve and was seen by priests and attendants to be obviously dying, instead of being tenderly nursed and soothed, he was removed from his couch, conveyed to the nearest gate, expelled, and allowed to die on the hillside unhelped and untended. Asklepios had rejected him, and no minister of the god might defile himself by any dealings with death. Sometimes, also, a poor woman anticipating maternity (who was being treated for some ordinary ailment) was suddenly and mercilessly expelled at the moment when she needed help and comfort most. This cruel law prevailed at all times, but in the days of the Antonines a home for the dying and also a sort of maternity hospital was erected outside the precinct.

The Benefits Derived by the Patients.

Apart from this cruel superstition, the sick seem to have been treated with kindliness and humanity, and they in general were benefited. The whole atmosphere of the place was helpful. The beauty of the landscape, the supreme art displayed in the buildings, the sculpture and the paintings on every hand, the charm of the sacred grove, of the cultivated flowers, and of the music, the solemn services in the temples, the plays in the great theatre, the exercises of the palæstra and the stadium, were constant sources of interest. Numerous semicircular seats or exedrae were provided in which the invalid could rest, the more cultured occupying themselves in the study of books from the library. The study of the innumerable votive offerings and commemorative tablets, recording cures, must have excited a beneficial faith and hope. The priests were men of culture and refinement, anxious to help and comfort. Look at this portrait of Asklepios, portraying sympathy and sorrow for the suffering. I think that, notwithstanding the superstition that prevailed, we can read in this face sympathy with suffering and an earnest desire to help. For those especially who had been initiated at Eleusis, and for whom advanced age or incurable sickness gave little prospect of life, the calm, dignified forms of Demeter, Persephone, and Iakchos would suggest patience and the hope of a pure spiritual after-life free from all bodily infirmity, for the Greek and Roman heart, as Ruskin tells us, was full of the hope of immortality.

The pure air of the mountains by night and day, the plain simple diet, the rest and change, and the medical treatment, the beauty and charm of the place made Epidaurus intensely popular among the Greeks, and the Christian teachers in the early centuries of our era found it more difficult to displace Asklepios than any other of the gods of Greece or Rome from the beliefs of their converts. It is quite evident from the writings of Ælius Aristides, who himself was a priest of Asklepios, that many of the members of the medical profession in towns and cities discarded the supernatural side of the work of the asklepieia; indeed, I doubt if Hippokrates himself had any faith in it. His writings show little evidence of such belief. Of course, in the towns there were physicians practising on a purely secular basis, some of them supported by a local rate named the ἰατρικόν. Some of these physicians had been trained at the asklepieia, others had a secular training as pupils with private practitioners. How far the public trusted in Amynos,

Amphiaraos, or Asklepios rather than in the skill of the doctor it is difficult to say; probably the majority held these beliefs strongly.

THE MEDICAL OFFICER OF THE LOCAL GOVERNMENT BOARD ON INFANT AND CHILD MORTALITY.

AN urgently needed investigation, on a commensurate scale, has been undertaken recently by the Medical Department of the Local Government Board respecting the actual and comparative incidence of mortality in early childhood in each administrative area of England and Wales, with especial reference to the causes responsible for the resulting loss or impairment of human life. This subject has hitherto been dealt with piecemeal, and therefore, from a national standpoint, inadequately, in the reports of the local medical officers of health; but as the methods of calculation and tabulation employed are frequently dissimilar, the results for comparative purposes are untrustworthy.

Infant Mortality in 1908.

Commenting on this matter in his first annual report as medical officer to the Board, Dr. Arthur Newsholme emphasised the fact that in the year 1908 one-fifth of the total deaths in this country were those of infants in their first year of life. He referred to the unequal distribution of this mortality, which at that time varied from fewer than 90 to more than 150 in each 1000 births, and further indicated broadly the measures locally necessary for the effectual safeguarding of infant life.

From the year 1905 onwards the Local Government Board has issued to medical officers of health forms of tables for use in their annual reports, showing the number and causes of all deaths occurring in their districts in each of the first four weeks, and in each of the 11 subsequent months of life. Inasmuch as many of these forms have hitherto been imperfectly filled up, supplementary inquiry has been necessary in order to complete the local information required for the exhaustive investigation of infant mortality throughout the country.

Inauguration of National System of Reports on this Subject.

In the year 1910 the introductory volume of what may rightly be styled a national system of reports on infant and child mortality was issued by the Board's medical officer, the object being to secure a bird's-eye view of the incidence of mortality during early childhood in each of the 54 administrative counties of England, as well as to determine in which of these areas further administrative action was called for in order to control excessive mortality at that stage of life. The endeavour was made, in the first place, to ascertain whether reduction of mortality in infancy necessarily affects injuriously the health of survivors at the later ages; secondly, to indicate the communities experiencing continuously high infant mortality; and lastly, to determine the relative importance of the factors responsible for abnormal waste of life in childhood.

A second volume of these reports has recently been issued by Dr. Newsholme. This is essentially a continuation of his introductory volume already referred to. It gives similar but much fuller statistical information respecting 241 administrative areas (mostly towns) whose populations vary between 20,000 and 750,000. In the aggregate these areas contain nearly three-fifths of the total population of this country.

For the first time the medical officers of those urban sanitary districts, among whom the waste of life is notorious, will now be able to ascertain the exact relative position of their districts, not only as regards the mortality at ages 0–1 and 1–5 years, but also as regards the mortality from various causes at different stages of infant life. The report is divided thus: the first part enumerates the detailed facts concerning the incidence of infant and child mortality; the close inter-relation subsisting between defective sanitation, poverty, and intemperance on the one hand and excessive infant mortality on the other forms the subject of the second part; whilst the third part contains a preliminary account of existing efforts for child welfare in this country.

The chief object of this report is stated to be the formation of a framework of facts on which further inquiry may be made both by the Board's medical staff and by the local officers of health. The report is intended to bring into relief the experience of those districts that still suffer excessive infant mortality; to show the amount of presumably avoidable loss of life; to indicate the circumstances under which this loss occurs and the reforms necessary to secure a minimum loss of infant life. The exact causes of excessive infant mortality are obviously complex; nevertheless, comparison between towns of low and towns of high mortality leads irresistibly to the conclusion that very much of the excessive mortality in the less favoured towns can be remedied, if only the appropriate measures are adopted.

Urban and Rural Infantile Mortality.

It is familiar knowledge that the conditions prevailing in most urban communities are unfavourable to infant life. From the report of the Registrar-General for 1911 it may be gathered that the urban infant is almost as healthy at birth as is the rural. During the first month of life, when more than one-third of the total infant mortality occurs, the urban excess is only 8 per cent. During the first three months the urban is only 11·6 per cent. higher than the rural rate of death, while in the next three months it is 43 per cent., and in the second half of the first year it is 67 per cent. higher in the urban than in the rural districts. Speaking generally, the towns having respectively a high or a low rate of infant mortality have similarly a high or a low mortality in the next four years of life. In some towns the children suffer more severely at ages 1 to 5 than in their first year. The conclusion previously stated would therefore appear to be supported, that a high infant death-rate in a given locality generally implies a high death-rate in the next four years of life, while a similar association is found between low death-rates at both age periods. In a previous report this comparison was followed up to the age of 20 years, and from this it appears that, speaking generally, the communities suffering from excessive infant and child mortality continue to experience excessive mortality, though in a less degree, at the higher ages.

Reduction of Infant Mortality in Recent Years.

Prior to the year 1901 there is no indication of any substantial decline in English infant mortality. The steady improvement from 1901 onwards is one

of the most striking features of recent statistical history. Some conception of the life-saving thus secured may be gathered from the following illustration. In the seven years 1906–12 the deaths of 736,682 infants occurred in England and Wales, equivalent to an average rate of 115 per 1000 births. Had the infant death-rate been 144 per 1000, as it had been in the seven years 1899–1905, there would have perished 922,454 infants in the years 1906–12. The improved conditions imply a saving of 185,772 lives during these seven years.

Defective Sanitation, Poverty, and Intemperance affecting Infant Mortality.

Among the domestic forms of insanitation overcrowding and lack of cleanliness are the most detrimental to child life, and these fall most heavily on the poor. This usually means for the bottle-fed child unsatisfactory arrangements for the storage of food and the consumption of contaminated or partially decomposed milk. Among the defects of sanitation for which the local authorities are responsible the most injurious to infants are unsatisfactory methods of scavenging, defective paving of streets and passages, and insufficiency of water-supply. Respecting the effect of poverty on infant mortality, Dr. Newsholme observes that when poverty involves malnutrition of either the expectant or the nursing mother it is only reasonable to assume that injury to the offspring will occur. Statistics are quoted from the Registrar-General's report for 1911 which show that infant mortality increases with declining social position. The rate does not exceed 77 per 1000 births among families of the upper and middle class, whilst it is equal to 148 per 1000 among textile operatives and 160 among miners. But that these excessive death-rates are not necessarily connected with poverty is proved by the fact that the rate among agricultural labourers is only 97 per 1000.

We cordially recommend the two volumes of the series already published, as practically indispensable to students of modern vital statistics. As such they will doubtless be regarded, and probably acquired for reference by those who are responsible for the guardianship of the public health; they may also be profitably studied by those who contemplate future enrolment in the public health department of our profession.

FOURTH ANNUAL MEETING OF CLINICAL CONGRESS OF SURGEONS OF NORTH AMERICA.

AT the annual meeting of Clinical Congress, which was held in Chicago between Nov. 10th and 15th, 1913, the attendance numbered about 4000. As on previous occasions the holding of clinics was a special feature for which the wealth of material and the numerous hospitals and institutions of Chicago proved especially favourable.

The opening meeting took place on Monday evening, Nov. 10th, under the presidency of Dr. GEORGE EMERSON BREWER, of New York. Dr. E. W. ANDREWS, chairman of the committee of arrangements, introduced Sir RICKMAN GODLEE, President of the Royal College of Surgeons of England, who said that he had been impressed with the enormous amount of clinical material he had seen at all the hospitals visited, and had been much struck with the methodical manner in which instruction was carried on at these institutions.

After some congratulatory remarks by Dr. MURRAY MCLAREN, President of the Canadian Medical Association, and by Professor KRÖNIG and Dr. C. J. GAUSS, of Freiburg, Dr. BREWER gave

The Presidential Address: A Preliminary Report on a Simple and Rapid Method of Pyloric Closure in Gastro-enterostomy.

Dr. Brewer referred to the defects, as pointed out by Tappliner, of all simple methods of pyloric closure, and after reviewing the various methods suggested in the past, described his method. This consists in constriction of the pylorus by an aluminium band, which is easily passed round the tube at this point and is quickly rolled with the fingers into an unyielding ring with sufficient compression to obliterate the lumen of the tube, but not to compromise the vitality of the compressed tissues. Experiments upon dogs, he said, had shown that this method of closure produced a complete occlusion of the pylorus, as evidenced by the fact that water would not pass the constricted point when the stomach was distended, and also that sections through the pylorus and aluminium ring showed, on both gross and microscopic examination, not only that the pylorus was closed, but that the vitality of the tissues was not impaired. Another series of experiments showed that the same method could be applied to the pyloric antrum, and, further, that the pylorus, which had been closed for some months, could have its function restored by a second laparotomy and removal of the aluminium band. Although the method had not yet been used on the human subject, Dr. Brewer held that the animal experiments had been so conclusive that he beiieved it to be the simplest and safest method yet proposed for such cases.

Operation on the Gasserian Ganglion.

Dr. HARVEY CUSHING, of Boston, reported a series of 156 cases with only two fatalities.

On Nov. 11th Dr. JOHN B. DEAVER, of Philadelphia, read a paper on

Gastric Hæmorrhage.

He said that operation might be indicated in gastric carcinoma when hæmorrhage chanced to be an early symptom and there was still hope of cure, or in advanced, or otherwise inoperable, cancer when hæmorrhage was so profuse and persistent as to shorten even the period of prognosis. In this case the measures to be adopted were excision, gastro-enterostomy, or jejunostomy, according to the pathological condition found at operation. But four most essential questions remained to be settled: 1. The recognition of suitable cases. 2. The time to operate. 3. The type of operation. 4. The proof of our position by mortality statistics.

Dr. A. J. OSCHNER, of Chicago, said that one must not look upon gastric hæmorrhage primarily as a surgical emergency. As a result of the surgical possibilities established during the past few decades, a feeling had arisen that every serious condition must be attacked surgically. But this was justifiable only when the good judgment of the surgeon indicated that the patient was in such good condition that surgical treatment would offer the greatest possibility of cure. A careful and accurate diagnosis, based upon a thorough knowledge of the history of such cases, was the foundation for this judgment.

Mr. HERBERT J. PATERSON, of London, read a paper on

The Operation of Gastro-jejunostomy and the Principles that should Determine its Use.

He thought that there was little doubt that the

immediate results of the posterior operation were better than those of the anterior. Convalescence ran more smoothly and vomiting was less common. Moreover, the anterior operation might necessitate washing out the stomach during the first few days. As to remote results, he thought the advantage rested with the anterior operation. Mr. Paterson devoted the greater part of his paper to arguments showing that the operation of gastro-jejunostomy is a physiological one, notwithstanding Sir Berkeley Moynihan's expressed belief that the "physiological explanation of gastro-jejunostomy is rot." The four practical lessons, he said, were: 1. That the type of gastro-jejunostomy employed is of less importance than the manner in which it is performed. 2. That if gastro-jejunostomy be a physiological operation its use for the treatment of gastric hæmorrhage is correct and explicable. 3. That occlusion of the pylorus is an unnecessary complication of gastro-jejunostomy, and is based on erroneous pathology. 4. That if gastro-jejunostomy be a physiological operation, then it is as efficient a treatment for ulcers of the body of the stomach as for ulcers near the pylorus; in other words, gastro-jejunostomy is preferable to excision.

Dr. CARL BECK, of Chicago, said that Mr. Paterson's remarks in regard to the anterior and posterior operations, as well as the relative merits of each, were important and suggestive. As to whether pyloric exclusion was practically useless, further experimentation was needed.

On Nov. 12th Professor KRÖNIG read a paper on

The Radiotherapeutic Treatment of Benign and Malignant Tumours.

He said that they had treated 254 cases of cancer with Roentgen rays and radium, 150 of them on purely therapeutic lines and without operation. Of these 150, 140 were treated with Roentgen rays and mesothorium; in 10 the Roentgen ray alone was used. Of 64 cases of carcinoma 43 cases had been treated for the prevention of secondary growth almost exclusively with unfiltered Roentgen rays, while 21 cases were treated partly with filtered and partly with unfiltered rays. The difference was striking. While 32 out of the 43 cases died of carcinoma, they had been able to follow the subsequent history of 20 out of the 21 cases and found that 60 per cent. of the recurrences occurred the first year after operation. Recurrent cancer had been treated with radioactive substances. The 140 cases treated with Roentgen rays and mesothorium should be differentiated into two groups: 1. Those in which carcinoma had not spread beyond the primary focus into the neighbouring tissue, and in cancer of the cervix where the carcinomatous growth had spread into the parametrium and glands, so that operation was out of the question. 2. Those carcinomas in which additional metastases were already present. While it had been found possible to produce remarkable retrogressions and checking of the carcinomatous metastases by intense radiation of Roentgen rays and radium, in all cases the carcinoma had spread later on. They could not say they had saved a single patient. In the second group the majority of cases were at the present time impossible of cure.

Dr. HOWARD A. KELLY, of Baltimore, said he had employed radium in 188 cases of malignant growths. He had treated 40 cases of cancer of the lower part of the uterus, where the disease was apt to spread rapidly, and the cases were considered hopelessly advanced and inoperable, and in three of these, after extensive operation, radium was used. In these three cases there had been no recurrence and health had been fully restored. He had also had four cases inoperable on account of the patients' general condition, where apparently a cure had resulted. Dr. Kelly thought that with an abundant supply of radium its use for superficial cancer would yield better results than surgery.

(To be continued.)

MEDICINE AND THE LAW.

Post-mortem Examinations and the Consent of Relatives.

A JUDGMENT delivered recently by Lord Anderson in the Court of Session, Scotland, is of interest to those called upon to make post-mortem examinations. In the case in question an action for damages (we use English phraseology rather than the less familiar Scottish legal terms) was brought by Mrs. Hughes, the widow of a deceased miner, against Dr. R. C. Robertson on the ground that he had made a post-mortem examination of her husband's body without authority, and that he had destroyed certain parts of the body instead of replacing them for burial with the rest of it. The action was successfully defended for Dr. Robertson by the Medical and Dental Defence Union of Scotland, Lord Anderson being of the opinion upon the evidence that the defendant had sufficient authority for what he did, and that he had in fact restored the heart to the body, although he had burnt portions of the intestines, a course justified by their decomposed condition. It is not necessary to recite the facts upon which this decision was based and which amply justified it, but it may be mentioned that there had been, or was alleged to have been, an accident, injuring the abdomen of the deceased, that after a day or two he had gone to the infirmary at Kilmarnock, that an exploratory examination had been made by the defendant who is one of the surgeons of that institution, that the patient's condition had proved to be very serious, and that two days later he died. To this it may be added that there was evidence that a suggestion was at some time made by the deceased both to Dr. Robertson and to Dr. A. Revie, the medical officer of the colliery, that the deceased had made an indiscreet meal of whelks and chip potatoes, and that the widow and dependents afterwards made a successful claim before the sheriff substitute under the Workmen's Compensation Act. It will readily be understood that in these circumstances the probability of a post-mortem examination being required by the relatives was taken into consideration, together with direct evidence as to some of them (but not the widow) having asked Dr. Robertson to make one. It is of more general interest, however, to note the points of law referred to by Lord Anderson, not because they have any element of novelty, but because his lordship's judgment shows that principles established in such matters are not likely to be departed from. With regard to this Lord Anderson said emphatically, "It is quite well settled by the cases of Pollock *v.* Workman, 2 Fraser, and Conway *v.* Dalziel, 3 Fraser, that an unauthorised post-mortem examination is a legal wrong." This, he explained, was on the principle that distress might be caused to relatives by the dissection of the body of one who in life was dear to them,

and he referred to the damages in such a case as a solatium for injured feelings. As to the alleged abstraction and detention of parts of the body by those performing the examination Lord Anderson said: "This may, and perhaps does, *per se* found a claim for damages; but it is difficult for me to appreciate the attitude of mind which resents such an action and at the same time condones the dissection of the body." A point, not of law, but illustrating the condition of fact, arising in such a case may here be noted. It was put forward that the relatives who asked for a post-mortem examination assented only to such an investigation as would not necessitate any dissection. Lord Anderson came to the obvious and reasonable conclusion that the persons who dealt with the matter, if they wanted evidence to establish the fact of an accident, required and intended to ask for such an examination as would be necessary for that purpose, which, of course, would involve opening the body. Among the defences formally raised was one to the effect that the deceased was being treated in a public charitable institution, that the defendant was acting partly, at any rate, in an official capacity as surgeon to the Kilmarnock Infirmary, and that as such he was obliged to give a certificate of the cause of death. Lord Anderson said as to this: "I do not think the court can too emphatically lay down, nor can medical men too distinctly and constantly keep in mind, that a medical practitioner in circumstances like the present has no right apart from authority to dissect a dead body." The question whether the authority for this purpose should be in writing was referred to. As to this the learned judge observed that it was not in his opinion essential. Authority could be proved by other evidence, but he called attention to the advantages of a written authority in such a matter, and intimated that medical men would be taking a useful hint if as a result of the case before him they insisted upon it. The deduction, in short, to be made from a case of an unusual kind arising out of circumstances that are of not common occurrence is that a medical man about to hold a post-mortem examination at the request, or at the supposed request, of a private individual should have authority in writing for doing so, stating distinctly the nature of the examination; and should take care that the person signing that authority is so qualified by relationship or other circumstances that no one will be able to come forward and object as having a better right to be consulted. On the majority of occasions, however, in England at any rate, when post-mortem examinations are held, they are made by the order of a coroner or under some other authority, which fully protects the practitioner or pathologist, and the post-mortem examination made on behalf of private individuals is of comparatively rare occurrence.

Back-to-Back Houses and the Local Government Board.

The Chesterfield rural district council recently had the satisfaction of being upheld in its views with regard to a number of insanitary dwelling-houses by an inspector of the Local Government Board, who held an inquiry upon an appeal by the landlord. The houses in question were situated in Eckington, being back-to-back houses, and the requirements of the council were conversion of privies into water-closets, paving of backyards, general repairs, and the making of each pair of front and back houses into one house. The owner of some of the houses complained of insisted with regard to the last requirement that it would suffice if he put in ventilators instead of effecting the conversion demanded. Another landlord expressed willingness to comply, but awaited the result of the appeal of the first mentioned before doing so. A closing order was made by the rural district council under the Housing and Town Planning Act, 1909, and an appeal to the Local Government Board followed as stated. The inspector, upon the evidence of Dr. H. Peck, medical officer of health to the council, and other witnesses, and after inspecting the premises, confirmed the closing order made by the rural district council. Incidentally he declined to accept the contention put forward that the alleged existence of 16,000 back-to-back houses in Sheffield and similar conditions prevalent elsewhere justified their retention at Eckington. Dr. Peck, who is entitled to congratulation on his success in the matter, was cross-examined upon this point, and defined the relative progress of sanitation in Eckington and Sheffield neatly by saying, "They get what they can; we get as much as we can." It was pointed out that insanitary houses attracted and collected tenants of an undesirable character. This the inspector ruled to be irrelevant to the purposes of his inquiry.

Public Health.

REPORTS OF SCHOOL MEDICAL OFFICERS.

City of Birmingham.—The city of Birmingham is to be heartily congratulated on possessing a medical officer of the calibre of Dr. George A. Auden. The 1912 report shows the development of a system of inspection and treatment of a fine type in which an attempt is made to correlate all the agencies which have to do with child welfare and to deal with all the problems of special groups of defective children which arise in school work. Birmingham has recently taken within its borders certain outlying districts, and the centralisation of work thus involved has set free premises used as subcentres for inspection and treatment work in addition to the central office. And it is proposed to make the assistant school medical officers, with their headquarters at these subcentres, largely autonomous, with due regard to the necessities of central administrative control. The institution of five dental clinics is recorded, the central and suboffices are equipped for refraction work, an ophthalmic surgeon has been appointed, and an arrangement made for the supply of spectacles at cheap rates. It is proposed to build a central school clinic, so freeing the offices for clerical work, and in connexion with operations for tonsils and adenoids beds are to be provided and patients kept in for 24 hours. When the scheme is fully in operation Birmingham will be equipped for the amelioration of all those defects in school children, for which there is inadequate provision elsewhere, with the exception of deformities needing massage and special exercises. The report states that with the progress of the work the school medical department "is assuming more and more the character of a Central Bureau of Child Welfare." This admirable state of affairs is no doubt made possible by the broadly statesmanlike interpretation of the duties of the school medical officer, which is taken by Dr. Auden and the Birmingham Education Committee. This is best indicated by mentioning some points showing the range of the work. In the report is the account of 11 "parents' evenings," at which parents were talked to by Dr. Annie Anderson; a table (novel in school reports) of deaths of children of school age is given, and is valuable as showing the causes of death most fatal. Out of 521 deaths 27·8 per cent. were from infectious diseases, 12·6 per cent. from diseases of the heart and pericardium, and over 9 per cent. each from pneumonia, accidents, and tubercle (including phthisis but excluding meningitis), and diseases

of brain and meninges account for 7·8 per cent. Diseases of the lungs (other than phthisis) caused death in 2·4 per cent. A note by Dr. Hill emphasises the necessity (in order to get defective children treated) of effecting "some change ..... whereby the difficulties of parents are reduced." 1998 children suffering from illness have been notified to the medical officer by medical practitioners, and it is becoming possible in consequence to estimate the incidence of the various forms of chronic disease amongst school children. School buildings come in for attention, and the quadrangle, or failing that the "Staffordshire type," is recommended. A chart is given showing the result of an investigation into ventilation arranged under six typical methods, including the plenum system. Children in the Remand Home and at an industrial school are examined by the medical officer, who gives, as the result of an examination into the mental capacity of 20 boys at the latter institution, a report showing six as definitely mentally defective, one epileptic, and one borderland case. Emphasis is laid on the need for medical examination before committal. Ninety-six children on an epileptic register are examined every six months, and of these 41 are definitely improving. In 62 per cent. of the cases in which age at onset was noticed this was before five years. The open-air school, the physically defective, and the blind and deaf classes are reported on, and there are some especially valuable pages dealing with mental deficiency, not least of which is the report of personal observations made by an infants' mistress. The report from Birmingham shows what can be made of medical inspection and treatment in the hands of those who see the problems involved in a big way. It is earnestly to be hoped that some of the less advanced educational authorities will follow Birmingham's excellent example.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns, with an aggregate population estimated at 17,852,766 persons at the middle of 1913, 5565 births and 5070 deaths were registered during the week ended Saturday, Dec. 27th, 1913. The annual rate of mortality in these towns, which had been 13·2, 14·5, and 14·6 per 1000 in the three preceding weeks, further rose to 14·8 per 1000 in the week under notice. During the 13 weeks of the December quarter the mean annual death-rate in these towns averaged 13·9, against 13·7 per 1000 in London during the same period. Among the several towns the death-rate for the week ranged from 5·5 in Cambridge, 8·1 in Southport, 8·7 in Enfield, 9·6 in Leyton and in Ilford, and 9·7 in Oxford and in Gateshead, to 21·2 in Middlesbrough, 21·4 in Stoke-on-Trent, 22·6 in Oldham, 23·8 in Halifax, and 25·3 in Burnley.

The 5070 deaths from all causes were 73 in excess of the number in the previous week, and included 348 which were referred to the principal epidemic diseases, against numbers increasing from 269 to 341 in the three preceding weeks. Of these 348 deaths, 89 resulted from infantile diarrhœal diseases, 80 from measles, 61 from whooping-cough, 60 from diphtheria, 38 from scarlet fever, and 20 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases in the week under notice was equal to 1·0 per 1000, and coincided with the rate in the previous week. The deaths of infants (under 2 years of age) attributed to diarrhœa and enteritis, which had been 101, 94, and 96 in the three preceding weeks, declined to 89; of this number 29 were registered in London, 4 each in Birmingham, Liverpool, Manchester, and Sheffield, 3 in Middlesbrough, and 3 in Rhondda. The deaths referred to measles, which had increased from 39 to 62 in the four preceding weeks, further rose to 80, and caused the highest annual death-rates of 1·4 in Sheffield, 1·5 in West Bromwich, 1·9 in Stockport, 2·0 in Aberdare, 2·4 in Middlesbrough, and 6·2 in Burnley. The fatal cases of whooping-cough, which had been 32, 57, and 56 in the three preceding weeks, rose to 61, and included 10 in London, 6 in Birmingham, 4 each in West Ham, Leeds, and Hull, and 3 each in Birkenhead, Sheffield, and Sunderland. The deaths attributed to diphtheria, which had been 45, 70, and 69 in the three preceding weeks, declined to 60; 6 deaths occurred in Birmingham, 5 in London, and 3 each in Northampton, Liverpool, and Sheffield. The deaths referred to scarlet fever, which had been 37, 23, and 38 in the three preceding weeks, were again 38 in the week under notice, and included 7 in Birmingham, 6 in London, and 3 each in Liverpool, Manchester, and Sheffield. The fatal cases of enteric fever, which had been 14, 26, and 20 in the three preceding weeks, were again 20 during the week, of which number 4 were recorded in London, 2 in Portsmouth, and 2 in Hull.

The number of scarlet fever patients in the Metropolitan Asylums and the London Fever Hospitals, which had been 4143, 4137, and 4048 at the end of the three preceding weeks, had further declined to 3946 on Dec. 27th; 326 new cases were admitted during the week, against 524, 552, and 458 in the three preceding weeks. These hospitals also contained on the date mentioned 1113 cases of diphtheria, 181 of whooping-cough, 60 of measles, and 55 of enteric fever, but not one of small-pox. The 1215 deaths from all causes in London were 63 fewer than the number in the previous week, and were equal to an annual death-rate of 14·0 per 1000. The deaths referred to diseases of the respiratory system, which had been 227, 291, and 307 in the three preceding weeks, declined to 280, and were 6 below the number recorded in the corresponding week of last year.

Of the 5070 deaths from all causes in the 96 towns, 187 were attributed to different forms of violence, and 398 were the subject of coroners' inquests. The causes of 52, or 1·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Manchester, Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, and in 68 other smaller towns. Of the 52 uncertified causes of death, 15 were recorded in Birmingham, 4 in Bootle, 3 each in Liverpool, Warrington, Blackburn, and Hull, and 2 each in Gillingham, Burnley, Preston, Sheffield, and South Shields.

In the 95 English and Welsh towns 9591 births and 6375 deaths were registered during the week ended Saturday, Jan. 3rd. The annual rate of mortality in these towns, which had risen from 13·2 to 14·8 per 1000 in the four preceding weeks, further increased to 18·6 per 1000 in the week under notice. This was the highest death-rate recorded in any week of the year 1913, but was partly due to delayed registration of deaths occurring in the previous week. During the 14 weeks included in the December quarter of last year the mean annual death-rate in these towns averaged 14·2, against a corresponding rate of 14·1 per 1000 in London. Among the several towns the death-rate last week ranged from 8·3 in Hornsey, 9·6 in Barrow-in-Furness, 9·9 in Wimbledon, 10·2 in Ilford, and 10·5 in Eastbourne, to 24·8 in Carlisle, 25·9 in Smethwick, 27·4 in Great Yarmouth, 31·1 in Burnley, and 32·1 in Bath.

The 6375 deaths from all causes were 1305 in excess of the number in the previous week, and included 346 which were referred to the principal epidemic diseases, against 341 and 348 in the two preceding weeks. Of these 346 deaths, 80 resulted from infantile diarrhœal diseases, 76 from measles, 76 from whooping-cough, 64 from diphtheria, 34 from scarlet fever, and 16 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases last week was equal to 1·0 per 1000, and was equal to the rate recorded in the two preceding weeks. The deaths of infants (under 2 years of age) attributed to diarrhœa and enteritis, which had been 94, 96, and 89 in the three preceding weeks, further declined to 80 last week, and included 26 in London, 6 in Sheffield, 4 in Manchester, 3 in Tynemouth, and 3 in Swansea. The deaths referred to measles, which had been 54, 62, and 80 in the three preceding weeks, slightly fell to 76 last week, and caused the highest annual death-rates of 1·6 in Rhondda, 1·9 in Middlesbrough, 2·0 in Barnsley, 2·1 in Warrington, and 4·8 in Burnley. The fatal cases of whooping-cough, which had been 57, 56, and 61 in the three preceding weeks, further rose to 76 last week; of this number 11 occurred in London, 9 in Birmingham, 8 in Manchester, 7 in Sheffield, 6 in Liverpool, and 4 in West Ham. The deaths attributed to diphtheria, which had been 70, 69, and 60 in the three preceding weeks, rose to 64 last week, and included 11 in London, 7 in Birmingham, 3 in Leeds, and 3 in Willesden. The deaths referred to scarlet fever, which had been 23, 38, and 38 in the three preceding weeks, were 34 last week, of which number 5 were recorded in London, 4 in Birmingham, 4 in Manchester, 3 in Liverpool, and 3 in Sheffield. The fatal cases of enteric fever, which had been 26, 20, and 20 in the three preceding weeks, further declined to 16 last week, and included 2 each in London, Wigan, Bradford, and Leeds.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever Hospitals, which had decreased from 4143 to 3946 in the four preceding weeks, had further declined to 3874 on Saturday last; 425 new cases were admitted during the week, against 552, 458, and 326 in the three preceding weeks. These hospitals also contained on Saturday last 1111 cases of diphtheria, 193 of whooping-cough, 52 of enteric fever, and 48 of measles, but not one of small-pox. The 1615 deaths from all causes in London were 400 in excess of the number in the previous week, and were equal to an annual death-rate of 18·6 per 1000. The deaths referred to diseases of the respiratory system, which had been 291, 307, and 280 in the three preceding weeks, rose to 423

last week, and were 137 above the number recorded in the corresponding week of last year.

Of the 6375 deaths from all causes in the 96 towns, 257 were attributed to different forms of violence, and 660 were the subject of coroners' inquests. The causes of 66, or 1·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Manchester, Leeds, Bristol, West Ham, Bradford, Hull, Nottingham, and in 63 other smaller towns. Of the 66 uncertified causes of death, 14 were registered in Birmingham, 11 in Liverpool, 4 in West Hartlepool, and 3 each in London, St. Helens, Preston, and Sheffield.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns, with an aggregate population estimated at 2,259,600 persons at the middle of 1913, 1025 births and 777 deaths were registered during the week ended Saturday, Dec. 27th, 1913. The annual rate of mortality in these towns, which had been 15·6, 17·0, and 17·3 per 1000 in the three preceding weeks, further rose to 17·9 per 1000 in the week under notice. During the 13 weeks of the December quarter the mean annual death-rate in these Scotch towns averaged 15·6, against 13·9 per 1000 in the 96 large English towns during the same period. Among the several towns the death-rate for the week ranged from 13·0 in Kirkcaldy, 13·4 in Perth, and 14·9 in Hamilton, to 20·5 in Falkirk, 24·8 in Greenock, and 28·9 in Coatbridge.

The 777 deaths from all causes were 26 in excess of the number in the previous week, and included 78 which were referred to the principal epidemic diseases, against 86 and 79 in the two preceding weeks. Of these 78 deaths, 37 resulted from measles, 11 from scarlet fever, 11 from whooping-cough, 10 from diphtheria, and 9 from infantile diarrhœal diseases, but not one from enteric fever or from small-pox. These 78 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·8, against 1·0 per 1000 in the 96 large English towns. The deaths attributed to measles, which had been 40, 36, and 39 in the three preceding weeks, fell to 37 in the week under notice, of which number 14 occurred in Glasgow, 8 in Edinburgh, 7 in Greenock, and 4 in Leith. The deaths referred to scarlet fever, which had been 8, 12, and 11 in the three preceding weeks, were again 11 during the week, and included 4 in Glasgow and 4 in Edinburgh. The fatal cases of whooping-cough, which had been 5, 6, and 3 in the three preceding weeks, rose to 11 in the week under review, of which 5 occurred in Glasgow and 3 in Paisley. The deaths attributed to diphtheria, which had been 12, 17, and 12 in the three preceding weeks, declined to 10, and comprised 4 in Glasgow, 3 in Aberdeen, 2 in Edinburgh, and 1 in Ayr. The deaths of infants (under 2 years) referred to diarrhœa and enteritis, which had been 14, 13, and 14 in the three preceding weeks, fell to 9, of which 3 were recorded in Glasgow.

The deaths referred to diseases of the respiratory system, which had been 123, 157, and 139 in the three preceding weeks, rose to 167 in the week under notice; 31 deaths were attributed to different forms of violence, against 30 and 32 in the two preceding weeks.

In the 16 largest Scotch towns 1138 births and 881 deaths were registered during the week ended Saturday, Jan. 3rd. The annual rate of mortality in these towns, which had increased from 15·6 to 17·9 per 1000 in the four preceding weeks, further rose to 20·3 per 1000 in the week under notice. During the 14 weeks included in the December quarter of last year the mean annual death-rate in these Scotch towns averaged 15·9, or 1·7 per 1000 above the corresponding rate recorded in the 96 large English towns. Among the several towns the death-rate last week ranged from 7·3 in Falkirk, 10·4 in Perth, and 14·0 in Motherwell to 21·7 in Glasgow, 22·3 in Dundee, and 28·9 in Greenock.

The 881 deaths from all causes were 104 in excess of the number in the previous week, and included 85 which were referred to the principal epidemic diseases, against 79 and 78 in the two preceding weeks. Of these 85 deaths, 50 resulted from measles, 12 from diphtheria, 11 from infantile diarrhœal diseases, 7 from scarlet fever, and 5 from whooping-cough, but not one from enteric fever or from small-pox. These 85 deaths from the principal epidemic diseases were equal to an annual death-rate of 2·0, against 1·0 per 1000 in the 96 large English towns. The deaths attributed to measles, which had been 36, 39, and 37 in the three preceding weeks, rose to 50 last week; of this number 24 occurred in Glasgow, 10 in Edinburgh, 7 in Greenock, 3 in Paisley, and 3 in Leith. The deaths referred to diphtheria, which had been 17, 12, and 10 in the three preceding weeks, slightly rose to 12 last week, and included 4 in Glasgow, 3 in Aberdeen, and 2 in Edinburgh. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 13, 14, and 9 in the three preceding weeks, rose to 11 last week, of which 4 were recorded in Aberdeen and 2 in Dundee. The deaths attributed to scarlet fever, which had been 12, 11, and 11 in the three preceding weeks, further declined to 7 last week, and included 3 in Glasgow and 2 in Motherwell. The deaths referred to whooping-cough, which had been 6, 3, and 11 in the three preceding weeks, fell to 5 last week, and comprised 2 in Glasgow, 2 in Greenock, and 1 in Coatbridge.

The deaths referred to diseases of the respiratory system, which had been 157, 139, and 167 in the three preceding weeks, further rose to 184 in the week under notice; 30 deaths were attributed to various forms of violence, against 32 and 31 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland, with an aggregate population estimated at 1,199,180 persons at the middle of 1913, 350 births and 366 deaths were registered during the week ended Saturday, Dec. 27th, 1913. The annual rate of mortality in these towns, which had been 16·0, 17·7, and 18·9 per 1000 in the three preceding weeks, declined to 15·9 per 1000 in the week under notice. During the 13 weeks of the December quarter the mean annual death-rate in these towns averaged 17·2 per 1000; in the 96 large English towns the corresponding rate did not exceed 13·9, while in the 16 Scotch towns it was equal to 15·6 per 1000. The annual death-rate for the week was equal to 17·1 in Dublin (against 14·0 in London and 17·3 in Glasgow), 19·8 in Belfast, 10·9 in Cork, 11·4 in Londonderry, 13·5 in Limerick, and 11·4 in Waterford, while in the 21 smaller towns the mean death-rate did not exceed 9·2 per 1000.

The 366 deaths from all causes were 69 fewer than the number in the previous week, and included 31 which were referred to the principal epidemic diseases, against 36 in each of the three preceding weeks. Of these 31 deaths, 10 resulted from whooping-cough, 7 from scarlet fever, 7 from infantile diarrhœal diseases, 3 from measles, 2 from enteric fever, and 2 from diphtheria, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·3 per 1000; in the 96 large English towns the corresponding rate did not exceed 1·0, while in the 16 Scotch towns it reached 1·8 per 1000. The deaths attributed to whooping-cough, which had been 4, 6, and 6 in the three preceding weeks, rose to 10, of which 7 occurred in Belfast. The deaths referred to scarlet fever, which had been 13, 8, and 8 in the three preceding weeks, were 7, and comprised 6 in Belfast and 1 in Newry. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 13, 6, and 11 in the three preceding weeks, declined to 7, of which 5 were recorded in Dublin. The 3 deaths attributed to measles were equal to the average in the earlier weeks of the quarter, and occurred in Dublin, Belfast, and Armagh respectively. The 2 fatal cases of diphtheria were recorded in Dublin, and those of enteric fever in Limerick and Galway respectively.

The deaths referred to diseases of the respiratory system, which had been 73, 92, and 80 in the three preceding weeks, rose to 89 in the week under notice. Of the 366 deaths from all causes, 92, or 25 per cent., occurred in public institutions, and 5 resulted from various forms of violence. The causes of 11, or 3·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 96 large English towns the proportion of uncertified causes of death did not exceed 1·0 per cent.

In the 27 town districts of Ireland 682 births and 593 deaths were registered during the week ended Saturday, Jan. 3rd. The annual rate of mortality in these towns, which had been 17·7, 18·9, and 15·9 per 1000 in the three preceding weeks, rose to 25·7 per 1000 in the week under notice. During the 14 weeks included in the December quarter of last year the mean annual death-rate in these towns averaged 17·8 per 1000; in the 96 large English towns the corresponding rate did not exceed 14·2, while in the 16 Scotch towns it was equal to 15·9 per 1000. The annual death-rate last week was equal to 30·4 in Dublin (against 18·6 in London and 21·7 in Glasgow), 25·4 in Belfast, 28·6 in Cork, 21·6 in Londonderry, 12·2 in Limerick, and 17·1 in Waterford, while in the 21 smaller towns the mean death-rate was equal to 20·5 per 1000.

The 593 deaths from all causes were 227 in excess of the number in the previous week, and included 32 which were referred to the principal epidemic diseases, against 36 and 31 in the two preceding weeks. Of these 32 deaths, 7 resulted from whooping-cough, 7 from measles, 7 from diphtheria, 6 from infantile diarrhœal diseases, 3 from scarlet fever, and 2 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases last week was equal to 1·4 per 1000; in the 96 large English towns the corresponding rate did not exceed 1·0, while in the 16 Scotch towns it reached 2·0 per 1000. The deaths attributed to whooping-cough, which had been 6, 6, and 10 in the three preceding weeks, declined to 7 last week, and comprised 6 in Belfast and 1 in Newtownards. The 7 deaths referred to measles, of which 5 occurred in Armagh and 2 in Dublin, were 4 above the average in the earlier weeks of last quarter. The fatal cases of diphtheria, which had been 8, 8, and 2 in the three preceding weeks, rose to 7 last week, and comprised 4 in Dublin, 2 in Belfast, and 1 in Londonderry.

The deaths of infants (under 2 years) attributed to diarrhœa and enteritis, which had been 6, 11, and 7 in the three preceding weeks, were 6 last week, of which 3 were registered in Dublin. The deaths referred to scarlet fever, which had declined from 13 to 7 in the four preceding weeks, further fell to 3 last week, and were all recorded in Belfast. The 2 fatal cases of enteric fever, which were equal to the weekly average during last quarter, were recorded in Dublin and Belfast respectively.

The deaths referred to diseases of the respiratory system, which had been 92, 80, and 89 in the three preceding weeks, further rose to 162 in the week under notice. Of the 593 deaths from all causes, 173, or 29 per cent., occurred in public institutions, and 17 resulted from various forms of violence. The causes of 26, or 4·4 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 96 large English towns the proportion of uncertified causes of death did not exceed 1·0 per cent.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments have been notified:—Surgeons: A. Simpson to the *Fisgard*, temporary; D. P. H. Pearson to the *Antrim*; D. G. Arthur to the *Halcyon*, additional, for the *Spanker*; P. G. Egan to the *Doris*, and for medical charge on voyage out, and to the *Bramble*, on recommissioning; A. J. Patterson to the *Sandpiper*, additional, and on recommissioning; W. A. S. Duck to the *Robin*, additional, and on recommissioning; D. Loughlin to the *Clio*, additional, and on recommissioning; B. E. P. Sayers to the *Britomart*, additional, and on recommissioning; A. E. Malone to the *Thistle*, additional, and on recommissioning; G. F. B. Page to the *Widgeon*, additional, and on recommissioning; A. J. Tozer to the *Woodlark*, additional, and on recommissioning; F. C. Wright to the *Snipe*, additional, and on recommissioning; L. Moss to the *Teal*, additional, and on recommissioning; P. L. Gibson to the *Moorhen*, additional, and on recommissioning; J. T. D. S. Higgins to the *Woodcock*, additional, and on recommissioning; C. F. Willes to the *Nightingale*, and H. E. Scargill to the *Kinsha*, both on recommissioning; and G. A. Bradshaw to the *Doris*, for medical charge on voyage home.

Fleet-Surgeon Edmund Corcoran has been placed on the Retired List, with permission to assume the rank of Deputy Surgeon-General.

ARMY MEDICAL SERVICE.

Surgeon-General Owen E. P. Lloyd, V.C., C.B., is placed on retired pay (dated Jan. 1st, 1914).

Colonel Walter G. A. Bedford, C.M.G., to be Surgeon-General, vice O. E. P. Lloyd, V.C., C.B. (dated Jan. 1st, 1914).

Lieutenant-Colonel Cecil Birt, from the Royal Army Medical Corps, to be Colonel, vice W. G. A. Bedford, C.M.G. (dated Jan. 1st, 1914).

Colonel Thomas J. R. Lucas, C.B., on completion of four years' service in his rank, retires on retired pay (dated Jan. 2nd, 1914).

Brevet Colonel Robert S. F. Henderson, K.H.P., from the Royal Army Medical Corps, to be Colonel, vice T. J. R. Lucas, C.B. (dated Jan. 2nd, 1914).

Major John V. Forrest, Royal Army Medical Corps, to be a Deputy Assistant Director-General (attached to the Department of the Director of Military Operations at the War Office), vice Major C. E. Pollock (dated Dec. 29th, 1913).

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel Arthur R. Aldridge, C.S.I., retires on retired pay (dated Jan. 3rd, 1914).

Brevet Lieutenant-Colonel Edgar M. Pilcher, D.S.O., to be Lieutenant-Colonel, vice C. Birt (dated Jan. 1st, 1914).

Major William G. Beyts to be Lieutenant-Colonel, vice E. M. Pilcher, D.S.O., supernumerary (dated Jan. 1st, 1914).

Major William D. Erskine retires on retired pay (dated Jan. 3rd, 1914).

The undermentioned officers are restored to the establishment:—Captain Richard J. C. Thompson (dated Dec. 12th, 1913). Lieutenant Bernard Woodhouse (dated Jan. 1st, 1914).

Surgeon-General T. M. Corker has taken up duty at Ootacamund Cantonment as Deputy Director of Medical Services to the Ninth (Secunderabad) Division, on transfer from the Sixth (Poona) Division of the Southern Army in India.

Colonel R. Kirkpatrick, C.M.G., has been appointed Assistant Director of Medical Services to the Sialkot and Abbottabad Brigades.

Lieutenant-Colonel A. R. Aldridge, C.S.I., has been selected for the increased rate of pay under Article 358 of the Royal Warrant. Lieutenant-Colonel C. H. Hale, D.S.O., has arrived home on leave of absence from the Military Hospital at Maymyo Cantonment. Lieutenant-Colonel J. Girvin has been appointed to the Irish Command. Lieutenant-Colonel J. H. Daly has been transferred from Limerick to Belfast and appointed to hold charge of the Military Hospital. Lieutenant-Colonel J. C. Connor has been appointed Senior Medical Officer on board the transport s.s. *Dongola*, leaving Karachi for Southampton on Feb. 18th with time-expired troops. Lieutenant-Colonel T. Du B. Whaite has been placed under orders to embark for a tour of duty in India, and on arrival will be appointed to hold charge of the Military Hospital at Lahore Cantonment, vice Lieutenant-Colonel J. Fallon.

Major J. D. C. Macpherson has been selected for appointment as Deputy Assistant Director of Medical Services to the West Lancashire Division. Major R. W. Clements has been appointed to the Irish Command for duty in the Cork District. Major H. W. H. O'Reilly has relinquished medical charge of effective troops at Colchester and embarked for a tour of service in India. Major P. J. Probyn, D.S.O., has been transferred from the Military Hospital at Sheffield to Leeds. Major W. C. Croly has been appointed to hold charge of the Military Hospital at Mount Abu Cantonment, vice Major E. W. Slayter, transferred to the Home Establishment, tour expired. Major C. B. Martin has been selected for appointment as Surgeon to the Royal Military Hospital at Sandhurst. Major J. P. Silver has been transferred from Kilworth Camp to the Military Hospital at Tipperary. Major R. H. Lloyd has been selected for appointment as Senior Medical Officer at Dagshai Cantonment, Simla Hills District. Major F. W. Begbie has been selected for advancement to the rank of Lieutenant-Colonel, vice H. N. Thompson, D.S.O., promoted. Major B. F. Wingate has arrived home for duty from India, tour expired. Major G. St. C. Thom has been appointed to the Scottish Command for a tour of duty. Major J. H. W. Houghton has been selected for appointment as Specialist in Advanced Operative Surgery to the Military Hospital at Meerut Cantonment.

Captain D. Ahern has been placed under orders to join the Irish Command on Jan. 17th and on arrival will be appointed to the Dublin District for duty. Captain H. V. Bagshawe has been transferred from the Military Hospital at Alexandria to Cairo. Captain P. Power has been appointed to the Military Hospital at Poonamallee on arrival in India. Captain H. B. Connell has taken up duty on the Recruiting Medical Staff at Liverpool on transfer from Shrewsbury. Captain C. W. Holden, at the termination of leave of absence, has been appointed to the London District. Captain B. G. Patch has joined at Bradford. Captain E. B. Booth has been placed under orders for transfer from the Military Hospital at Dundalk and embark for a tour of service in the Sierra Leone Protectorate. Captain H. St. M. Carter has been selected for appointment as Specialist in Operative Surgery to the Cambridge Military Hospital at Aldershot. Captain D. G. Carmichael has been transferred from Khanspur, Murree Hills District, to the Military Hospital at Sialkot Cantonment. Captain M. C. Wetherell has taken up duty at the Military Hospital, Fethard, on transfer from Kildare. Captain C. P. O'Brien-Butler has arrived home for duty from India, by exchange. Captain A. M. Benett has been appointed to the Scottish Command. Captain W. Benson has been selected for appointment as Company Officer at the Depôt, Royal Army Medical Corps, Aldershot. Captain A. Irvine-Fortescue has been selected to proceed to Japan for a three years' course of study of the Japanese language. Captain A. L. Stevenson has been transferred from the First (Peshawar) Division to the Ninth (Secunderabad) Division. Captain R. G. S. Gregg, specialist in operative surgery at the Military Hospital, Quetta Cantonment, has been placed under orders to relieve Major H. K. Palmer at Aden, tour expired. Captain H. T. Stack has been appointed to officiate as Cantonment Magistrate at Ranikhet by the Lieutenant-Governor of the United Provinces, vice Lieutenant-Colonel E. Waller, granted leave of absence. Captain S. O. Hall has been placed under orders for transfer from the Military Hospital at Quetta Cantonment to Burma for a tour of duty. Captain C. E. W. S. Fawcett has taken up duty at Queenstown on transfer from Cork. Captain H. W. Russell has taken over charge of the Bacteriological Research Laboratory at Brigade Headquarters, Ambala Cantonment. Captain V. Carruthers has been granted leave of absence. Captain R. A. Bryden has been transferred from the Military Hospital at Preston to Fleetwood. Captain J. B. Hanafin has been selected for appointment as Specialist in Electrical Science and Radiography to the Third (Lahore) Division.

INDIAN MEDICAL SERVICE.

Surgeon-General A. M. Crofts, C.I.E., has taken up duty as Deputy-Director of Medical Services to the Second (Rawal Pindi) Division of the Northern Army in India. The Honourable Surgeon-General H. W. Stevenson, C.S.I., has been granted furlough home from India for three months.

Lieutenant-Colonel P. C. H. Strickland has been selected for appointment as Officiating Assistant Director of Medical

Services to the Sirhind and Jullundur Brigades, vice Lieutenant-Colonel R. B. Roe. The services of Lieutenant-Colonel F. Jennings, superintendent of the Central Prison at Agra, on return from leave of absence, have been replaced at the disposal of the Home Department of the Government of India. Lieutenant-Colonel P. B. Haig has arrived home on leave of absence from India. The services of Lieutenant-Colonel H. W. Pilgrim have been replaced at the disposal of H.E. the Commander-in-Chief in India by the Home Department.

Major J. E. Clements has been appointed Superintendent of Central Prisons, vice Lieutenant-Colonel W. H. Gray, retired. Major H. C. Buckley, on return to duty from leave of absence, has been appointed to officiate as Civil Surgeon at Bulandshahr. Major E. J. Morgan, civil surgeon at Aligarh, has been granted furlough, combined with study leave of absence, home from India for one year.

Captain H. C. Keates, officiating civil surgeon at Campbellpore, has been appointed Plague Medical Officer at Lahore. Captain V. N. Whitamore has arrived home on leave of absence from India. Captain J. Taylor has been appointed to officiate as Assistant Director of the Bombay Bacteriological Laboratory during the absence on leave of Captain W. D. H. Stevenson. Captain P. M. Rennie has taken up duty as Health Officer and Civil Surgeon of the notified area at Delhi during the absence on leave of Lieutenant-Colonel W. H. Ogilvie. Captain G. Holroyd has taken up duty as Superintendent of the Central Jail at Dacca, in succession to Captain F. H. Salisbury. Captain H. P. Cook has been appointed on plague prevention duty to the Fyzabad district. Captain J. A. Cruickshank has been appointed to the Bacteriological Department. The services of Captain S. J. Bhathena have been replaced at the disposal of H.E. the Commander-in-Chief in India by the Home Department. Captain J. Anderson has been appointed Civil Surgeon at Miranshah. Captain T. F. Owens, chemical examiner and bacteriologist to the Government of Burma, has been granted privilege leave of absence.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Cadet Staff-Sergeant Owen Hairsine, from the University of London Contingent, Officers Training Corps, to be Lieutenant (on probation) (dated Nov. 29th, 1913).

TERRITORIAL FORCE.

Royal Army Medical Corps.

Major George St. Clair Thom, Royal Army Medical Corps, to be Deputy Assistant Director of Medical Services of a Territorial Division (dated Dec. 13th, 1913).

3rd Southern General Hospital, Royal Army Medical Corps: Captain William E. Robinson ceases to hold a commission in the Territorial Force (dated Jan. 1st, 1914).

2nd East Lancashire Field Ambulance, Royal Army Medical Corps: Supernumerary Captain George Ashton ceases to serve with the No. 18 Field Ambulance, Royal Army Medical Corps, Special Reserve, and is restored to the establishment (dated Jan. 7th, 1914).

3rd North Midland Field Ambulance, Royal Army Medical Corps: William Boyd to be Lieutenant (to be supernumerary) (dated Nov. 27th, 1913).

3rd London General Hospital, Royal Army Medical Corps: Captain Frederick R. Miller to be Major (dated Jan. 7th, 1914).

Highland Clearing Hospital, Royal Army Medical Corps: Alexander Gibbon to be Quartermaster, with the honorary rank of Lieutenant (dated Jan. 7th, 1914).

West Lancashire Clearing Hospital, Royal Army Medical Corps: Lieutenant-Colonel William Baron Cockill, from the 3rd West Lancashire Field Ambulance, Royal Army Medical Corps, to be Lieutenant-Colonel (dated Dec. 1st, 1913).

South Midland Clearing Hospital, Royal Army Medical Corps: Major Seymour Gilbert Barling, from the 1st Southern General Hospital, Royal Army Medical Corps, to be Lieutenant-Colonel (dated Jan. 7th, 1914).

Sanitary Service: Major Harold M. Richards resigns his commission (dated Jan. 7th, 1914).

Attached to Units other than Medical Units.—To be Captains: Lieutenant Andrew G. T. Hanks (dated Oct. 6th, 1913); and Lieutenant William C. F. Harland (dated Oct. 6th, 1913).

Captain George McKellar resigns his commission (dated Jan. 7th, 1914).

For Attachment to Units other than Medical Units.—To be Lieutenants: John Earnscleuch Brydon (dated Jan. 3rd, 1914); George Paul Anning (dated Nov. 22nd, 1913); and William Douglas Frew (dated Dec. 1st, 1913).

Supernumerary for service with the Officers Training Corps.—The following Lieutenants serving with the Royal College of Surgeons in Ireland Contingent, Senior Division, Officers Training Corps, resign their commissions (dated Jan. 7th, 1914):—Thomas Thomson and Henry Stokes.

TERRITORIAL FORCE RESERVE.

Royal Army Medical Corps.

Captain Charles Stuart Brebner, from the 1st London (City of London) Field Ambulance, Royal Army Medical Corps, to be Captain (dated Jan. 1st, 1914).

Surgeon-General William B. Bannerman, C.S.I., Indian Medical Service, has been appointed an Honorary Physician to the King in the place of Surgeon-Colonel J. Richardson, deceased.

ROYAL MEDICAL BENEVOLENT FUND.—At the December meeting of the committee 32 cases were considered and grants amounting to £284 made to 25 of the applicants. Appended is an abstract of the cases relieved:—

Widow, aged 58, of L.R.C.P. Edin. Husband died 18 years ago after a long illness, during which he was supported by the applicant. Is at present acting as nurse to a helpless invalid, but is obliged to give up because not strong enough for the duties. Voted £10.—Widow, aged 35, of M.D. No income; incapacitated by phthisis and requires help in order to go to a sanatorium; three children aged 12 to 5. Relieved twice, £10. Voted £10.—Widow, aged 46, of M.D. No income, and suffers from a spinal complaint by which she is quite incapacitated; two children, aged 6 and 5. Is endeavouring to obtain admission to a hospital for incurables. Relieved once, £5. Voted £18.—Daughter, aged 62, of late M.B. Lond. Only income £14 10s. a year, and has been disposing of her furniture to meet unavoidable expenses. Voted £12.—Daughter, aged 49, of late L.R.C.P., M.R.C.S. Is much run down after nursing her mother (recently deceased) through a long illness and is ordered a short rest before trying to find a post as companion. Voted £5.—Daughter, aged 63, of late M.R.C.S. Used to have a small school in a good London suburb, but was obliged to give it up owing to ill health and is now totally incapacitated. No income. Voted £12.—Daughter, aged 62, of late M.R.C.S. Has a small annuity, but finds when she has paid for a room and some attendance, which is necessary because she is nearly blind, there is not sufficient for other unavoidable expenses. Voted £5.—Widow, aged 62, of L.F.P.S. Glasg. No income and no relations or friends able to assist. Voted £12.—Daughter, aged 46, of late M.R.C.S. Has been an invalid for several years owing to pyæmia contracted in discharge of her duties as a nurse, and is now permanently incapacitated. Has a pension from the British Hospital for Incurables, and hopes to be elected to one from another institution, but requires help for maintenance and necessary attention meanwhile. Voted £12.—Daughter, aged 56, of late L.R.C.P. Has a pension from a charitable society, but finds it insufficient for the bare necessities of life and is unable to supplement it by suitable work. Relieved six times, £29. Voted £12.—Daughter, aged 58, of late M.D. Edin. Used to support herself as a governess, but for some years past has been unable to obtain a permanent post in that capacity, and at present is dependent on precarious earnings from needlework. Relieved four times, £27. Voted £12.—Widow, aged 59, of L.R.C.P. & S. Edin. After husband's death endeavoured to establish a small boarding house, but was compelled to give up owing to failing health and is now practically incapacitated. No income, and dependent on a daughter who is a lady help. Relieved once, £10. Voted £10.—Widow, aged 85, of M.R.C.S. Only income an annuity of £10 and the Old Age Pension. Children unable to help. Relieved three times, £18. Voted £10.—Daughter, aged 66, of late M.D. Edin. Used to be a governess, but is now unable to earn for herself because obliged to attend to two invalid sisters. Only income £10 a year given by an old friend. Relieved eight times, £96. Voted £12.—Widow, aged 67, of L.R.C.P. Edin. Supplements an annuity of £20 from a charitable society by addressing envelopes, &c. Relieved 16 times, £151. Voted £10.—Daughter, aged 51, of late M.D. Edin. No income and has been a chronic invalid for some years. Voted £10.—Widow, aged 54, of L.S.A. Quite unprovided for at husband's death several years ago and supports herself by letting rooms and by needlework. Two daughters, both teachers, but barely self-supporting. Relieved eight times, £88. Voted £12.—Daughter, aged 59, of late M.D. Lond. Used to give music lessons, but is no longer able to obtain pupils and is dependent on a sister whose income is very small. Eyesight failing and suffers from chronic rheumatism. Relieved 30 times, £230. Voted £12.—Widow, aged 52, of M.R.C.S. Since husband's death has been endeavouring to establish a boarding-house in the town where he practised, and now finds that with the help from this fund she can just meet her expenses. Voted £12.—Daughter, aged 62, of late M.R.C.S. Endeavours to support herself by letting lodgings and keeping fowls; health very feeble. Relieved once, £12. Voted £12.—Widow, aged 68, of L.R.C.P. Edin. Has a small house which is let at a rent of £24, but the lease expires in a few years' time and repairs have to be frequently done. Relieved 14 times, £162. Voted £12.—Widow, aged 57, of L.R.C.P. Irel. No income; health indifferent; is at present a caretaker, but receives no salary. Relieved six times, £72. Voted £12.—Daughter, aged 55, of late M.R.C.S. No income and unfitted to earn her living. Relieved six times, £67. Voted £18.—Widow, aged 40, of M.R.C.S. Quite unprovided for at husband's death, and endeavours to support herself and two delicate children by selling old clothes on commission and by doing needlework. Relieved once, £10. Voted £10.—Daughter, aged 30, of late M.R.C.S. Was obliged to give up a post as typist some months ago owing to a complete breakdown in health, but hopes shortly to be well enough to start again. Relieved six times, £34. Voted £12.

Contributions may be sent to the honorary treasurer, Dr. Samuel West, 11, Chandos-street, Cavendish-square, London, W.

MEDICAL PRACTICE UNDER THE INSURANCE ACT.

(BY OUR SPECIAL COMMISSIONER.)

(*Continued from p. 62.*)

XXXIII.—INSURANCE IN HUNGARY.—THE GREAT STRIKE AT COLOGNE.

FROM Leipsic I proceeded to Frankfurt-am-Main and to Cologne, passing *vid* Karlsbad, where I made some inquiries on my way as to the working of the insurance law in Austria. All forms of organisation are difficult in Austria because of the great variety of nationalities that go to make up the Empire. These nationalities have different languages, different religions, and different political aspirations, yet the Austrian insurance law is common to the entire Empire, so that the medical profession in this country can take hope as to the possibility of union in dealing with the questions involved. The Hungarian insurance law does not resemble the German law as closely as does the Act of the German-speaking provinces of Austria. In Germany compensation for accidents is provided by employers associated according to their trades. In Austria this is done by the provincial administrations and institutions. But so far as medical attendance and sick allowances are concerned, the system is the same in Germany, Austria, and Hungary. In Germany, however, invalidity and accidents are dealt with separately. In Hungary there is no provision for invalidity, but a joint administration for providing against sickness and accidents. The doctors complain that they are dependent on the societies which administer the insurance law. These societies are not unlike our English Friendly Societies, only the Government forces the workmen to belong to them. The managing committees consist half of workmen and half of employers.

What Hungarian Insurance Doctors Earn.

Medical men can prescribe anything that is within the official Pharmacopœia, and this regardless of cost. It is not surprising, therefore, that the societies complain of the doctors' extravagance. They even go so far as to accuse some practitioners of running up the drug bill so as to get a commission from the dispensing chemist. Doubtless this is one of the exaggerations that will arise in consequence of resentment. In Hungary the medical men are paid annually for each insured person from 5 to 7 kronen (4*s.* 4*d.* to 6*s.*). As this sum covers the families also, it will be seen that the pay is altogether insufficient. It has been calculated that this rate of payment works out at 6*d.* to 8*d.* per item, while in the very bad districts it falls to only 4*d.* per visit or consultation. The remuneration is so small that if on one or two rare occasions some less scrupulous practitioners have resorted to an unprofessional means of increasing their income, the fact, however deplorable, may be not altogether surprising.

In Hungary the doctors are supposed to receive 25 per cent. of all the contributions paid to the insurance funds, but it does not seem as if they had many insured persons entrusted to their care. Thus at Budapest, which is the most important centre, there is one great society, consisting of about 300,000 insured members. As, however, this society employs 560 medical men it can only allocate an average of some 540 insured persons to each of its medical officers. That is not much if only the income which such patients bring in is considered; but, as it includes the families as well, even making allowance for a certain number of bachelors, it must mean on an average a population of about 2000 for which each medical officer is held responsible. Even at the highest rate of payment, a capitation fee of 6*s.* for 540 insured persons equals £162 a year for attending the insured and their families, or about 2000 persons. The pay is thus reduced to a fraction above 1*s.* 7*d.* per head per annum. Miserable as this seems, I was assured it had only been obtained after many medical strikes, and is a considerable improvement on what used to obtain not many years ago. As an explanation it must be borne in mind that wages in Hungary are very low, and the subscriptions paid into the sick or insurance funds are correspondingly small.

A Five Years' Strike at Cologne.

When I reached Cologne I found, in a modified and mitigated form, the strike of 1909 was still continuing in 1913. But the medical men were in the main defeated, though they continue the struggle. The societies had formed themselves into a large trust, and in 1909 were able to engage the services of 60 medical men to replace the doctors who refused their coöperation. This is nearly double as large as the outside assistance which could be obtained during the strike of 1904, and therefore the Government had not the same cause to interfere by insisting that there should be enough doctors to attend on the insured. Nor were the 60 all imported; 14 of them were Cologne practitioners who had changed their views. Yet the opposition to medical views was not engineered without a struggle. The Cologne *Cassa* had to hunt all over Germany and, strange to say, it was at Leipsic that the greatest number of medical men willing to act against the interests of their profession was found. Large sums had to be offered to induce medical men thus to incur the opprobrium of their profession. In some cases as much as £500 a year, which is considered a large sum in Germany, and a contract for 10 years were offered. Then, to make their offers more tempting, the *Cassa* was willing to allow its medical officers to treat private patients and even promised to endeavour to secure such patients. A few societies have remained faithful to their old doctors and would not employ the imported strike-breakers, who are ignored by their professional brethren. There is a statute of the Leipziger Verband which forbids its members to consult with, or even to salute, a strike-breaker. Nor is any sort of acquaintance or association with the wives and children of strike-breakers allowed. The strike-breakers are practically boycotted; but they are, comparatively speaking, well paid. None of them are, as a rule, sent for to attend the visitors who frequent the hotels, and they have little or no connexion among the richer families. There are now about 82 doctors in the employ of the Cologne Insurance *Cassa*. I had an opportunity of speaking with one of the Government income-tax assessors, and ascertained that one of these imported doctors earned 9200 marks last year, or not quite £500; also it was shown that the profession has lost a great deal through the strike, perhaps as much as 1,000,000 marks (£50,000).

Raising the Wage Limit in Germany.

In spite of this great sacrifice the profession still

believes a sort of victory will crown their strike, though it is now in its fifth year. They at least have succeeded in making it impossible for a medical man desirous to rank high in his profession to serve the *Cassa*. Formerly, when the doctors were paid according to the number of insured persons on their list, there was some abuse. This was notably the case in regard to the railway servants, the lists being too long. To-day the imported doctors are paid a fixed annual salary however many patients they may have to see. To make them diligent a system of bonuses has been instituted, and thus they obtain payments over and above their incomes for what is considered extra work, *pro rata* of that extra work. Perhaps the new law, though unfavourable to the interests of the medical profession in general, may be of help in respect to the Cologne dispute.[1] It was to have come into operation last year, but the complications were so great that its application was postponed to 1914.

There are so many societies and each *Cassa* is so differently organised that it is no easy matter to apply the new law. In Cologne alone there are 16 different societies; some are for single men, others for public servants, others for factory workers with complicated subdivisions. They may all be united in one great *Cassa*.

The new law raises the wage limit for compulsory insurance from £100 to £125 a year. Therefore, a very large section of the population which paid fees will become contract patients, and the conditions in Germany will come nearer to those that prevail in England. This is distinctly threatening to medical interests. The new law will place under the care of imported doctors at Cologne, and any other city where similar troubles may arise, persons who till now have chosen their own medical attendants, and have been treated, so I am led to believe, with much greater care than they are likely to obtain from any imported staff employed by a *Cassa*. Already and within the £100 income limit there is a large number of insured persons who are very dissatisfied. So much is this the case that, in spite of the smallness of their incomes, they prefer to pay fees to an independent practitioner, and do not call in the insurance doctor. When the insured had, from 1904 to 1909, free choice of a medical attendant they had no need to pay fees. As insured persons they were generally able to secure the services of the medical attendant they preferred.

Lowering the Profession in Germany.

Contract practice, combined with the imposition by the *Cassa* of a doctor chosen by the *Cassa*, does undoubtedly tend to lower the status and aims of the medical profession in Germany, and that is why the more intelligent patients made so vigorous a claim for the free choice of medical attendants. They insisted that doctors should not be employed as the servants of the *Cassa*, but remain free men with patients coming freely to them, a point of view as clear to the medical men in Germany as in this country. The profession look forward to an improvement in the situation because the advantages of the free choice of doctor are becoming more and more appreciated. For another reason the victory may yet incline to medicine. There are signs that the imported doctors may get tired of the position which they occupy and go away. The patients are not contented with a medical attendant who, being secure of his income, has no motive for taking interest in his patients, a feeling which indicates that the bonus system alluded to has borne small fruit. On more than one occasion I have asked German practitioners whether, on the whole, the law on compulsory insurance has helped to raise or has it tended to lower the medical profession. As a result of these inquiries I think it may be said quite decisively that "medical men are not as highly esteemed to-day as they were 30 years ago," and I take these words from the mouth of a highly esteemed Cologne physician, who added that "to-day the insurance doctor is looked upon as an underpaid artisan."

Malingering in Germany.

Then there is in Germany, as in England, the great question of malingering which threatens with financial trouble, that in the weaker cases may lead to bankruptcy, more than one *Cassa*. For in Germany, as in England, this is a real "doctor's dilemma." If he denounces malingering he will be regarded as a hard and impracticable officer by the public, especially if he is a factory doctor, and he may not be re-elected to his post. On the other hand, if he appears to give sick certificates too readily his accessibility will be abused by the public, he will be accused of compromising the finances of his society, and be blamed by the management thereof. Unless the insurance doctors and the management of the societies work harmoniously together this difficulty must arise, but such harmony does exist, I was assured, at Frankfort, Munich, or Leipzig. In those towns, if the doctor twas to countenance any form of sickness that was adjudged to be malingering, he might be made to pay for the extra expense that had been occasioned. Of course, there must be an expert to act as referee, and all suspicious cases are sent to him either by the *Cassa* or the doctor who has attended the patient. If, further, the *Cassa* and the referees do not work well together there will be serious trouble, for the estimate of a good referee arrived at by a *Cassa* is based upon his powers of protecting the funds. At Cologne much discord has existed on this question. The *Cassa* wanted to use the referees to get a case up against the doctors who are now refusing coöperation, and to show that a free choice of doctor would be too expensive. The referees, in the opinion of the *Cassa*, ought to be constantly condemning the doctors for extravagance, and demonstrating that those who advocated the free choice of doctors were the practitioners who would be unsuitable for the public work. Of course, the referees did not lend themselves to the carrying out of these manœuvres, so they are not on the best of terms with the *Cassa*.

German Pride in Social Legislation.

It is just because the whole system works badly at Cologne that the doctors who have been on strike for five years still look forward to at least a partial victory. At present some of the imported doctors are paid for doing nothing, for insured persons on their lists will not consult them. They prefer to go to a private practitioner and do not even say that they are insured. They know that the medical man to whom they pay fees will not pack them off unnecessarily to a

[1] THE LANCET, Jan. 25th, 1913, p. 257.

hospital. For here I may remind my readers that the position in regard to hospitals is quite different in Germany to that which obtains in England. The hospital being a public institution cannot refuse to take in patients. The insurance doctor, when he is paid a fixed salary, saves himself much trouble by sending his patient off to the hospital. But this increases the taxation by augmenting the cost of the hospital. The *Cassa* does not contribute to the maintenance of insured patients in the hospitals. Now the taxpayer is beginning to discover that the imported doctors make greater use of the hospitals than the doctors who are on strike used to do.

The Germans are proud of their social legislation and will see to it that it works properly; therefore, the imported doctors are losing ground in public esteem. It is the boast of Germans that even the poorest, those who are not insured, may always obtain medical advice and the necessary care. There are the doctors of the poor and the hospitals for which no charge is made. Milk, wine, and brandy are forthcoming for the poorest, together with linen, fuel, and whatever else is needed. It is the magistrate who decides what has to be done for those who are ill, are not insured, and cannot pay. The theory is that no one who is ill should be in real want; but this situation costs a good deal, and the public does not desire to see the cost increased because certain medical men send patients unnecessarily to the hospitals. So it comes about that what the organised members of the profession have demanded all along is being gradually recognised as best, not merely for the doctors themselves, but above all for the public at large.

I think that this brief *résumé* of the German position may well be read for its points of comparison with the circumstances in which we now are at home. Similar difficulties are being experienced, and similar remedies are occurring to those interested in various ways. One last comment I must allow myself. The German troubles were perfectly well known to many people before the British legislation was even formulated.

(To be continued.)

KNIGHTWICK SANATORIUM.—The Worcestershire county council has agreed to undertake to provide sanatorium benefit for the insured under an arrangement with the Insurance Committee, and also for the non-insured. The main part of the sanatorium work will be carried on at Knightwick. This sanatorium dates from 1901, when a public meeting was held at Worcester and the Worcestershire Association for the Prevention of Consumption was formed. Mr. James Dangerfield, of Bilston, offered to the association the use of a house and grounds of 29 acres, known as The Agberrows, situated on the Ankerdine Hills, for five years at a nominal rent, with the option of purchase by the association at the end of that time. The offer was accepted, and by means of public subscriptions amounting to £4000 a sanatorium for 16 patients was built and opened in 1902. In 1906 the association purchased the house and grounds at a cost of £6000. In 1902 the county council contributed £300 towards the original building, and the King Edward VII. Worcestershire Memorial Fund produced £4750, which was handed to the trustees for the purpose of enlarging the sanatorium to form a county memorial in memory of the late King. Considerable enlargement is now proposed at an estimated cost of £11,600, towards which is available the memorial fund and £5220 to be received from the Local Government Board, being a grant of £90 per bed in respect of 58 beds. Of the balance of £1630 the county council will pay £1100.

Home and Foreign Notes.

(FROM OUR OWN CORRESPONDENTS.)

BRISTOL AND WESTERN COUNTIES.

University of Bristol.

To the munificent benefactions to the University of Bristol for which the Wills family has been responsible yet another has to be added. Mr. A. Stanley Wills has offered £1000 for the purchase of books which are needed for the library.

Research Defence Society.

In connexion with this society an interesting lecture was recently delivered in the large hall of the Victoria Rooms, Clifton, by Dr. Alice M. Corthorn, whose theme was the cruelty of those who sought to prevent the advance of medicine by agitating for the abolition of experiments on animals. The chair was taken by Dr. J. E. King, head master of Clifton College, who spoke strongly as to the necessity of such experiments. Questions asked by opponents of experimental medicine were replied to by the lecturer.

St. John Ambulance Brigade.

During 1913 the Bristol Corps dealt with no fewer than 12,088 cases, the transport department alone being responsible for 2925. On the day of the King's visit to the Royal Agricultural Show 236 officers, men, and sisters were on duty, over a thousand cases being dealt with.

Gloucestershire Royal Infirmary and Eye Institution.

At the last quarterly meeting of the governors of the Gloucestershire Royal Infirmary Dr. E. Dykes Bower, who had reached the age-limit prescribed by the rules of the institution, gave in his resignation as a member of the honorary medical staff, after having served 22 years as honorary surgeon and 32 years as ophthalmic surgeon. The chairman, Canon Eyre, in accepting the resignation on behalf of the governors, alluded to the valuable services Dr. Bower had given to the charity and announced his appointment as honorary consulting surgeon. It was also unanimously resolved to ask Dr. Bower to continue to take charge of the ophthalmic department.

A Munificent Bequest.

The late Mr. R. Hamlyn Hooker, of Weston-super-Mare, has bequeathed £1000 to the Weston-super-Mare Hospital.

Forty Years of Public Health Service.

Dr. Henry J. Alford has resigned the post of medical officer of health for the Taunton rural district after 40 years' service. The chairman of the rural council, in accepting Dr. Alford's resignation, expressed great regret at the decision, while speaking in high praise of Dr. Alford's services.

Jan. 6th.

SCOTLAND.

University of Edinburgh.

THE annual report of the University for 1913 shows that during the year the total number of matriculated students (including 549 women) was 3261. Of these, 1315 were enrolled in the Faculty of Medicine. Of the students of medicine, 563, or nearly 43 per cent., belonged to Scotland; 231, or

over 17½ per cent., were from England and Wales; 72 from Ireland; 102 from India; 300, or over 22½ per cent., from British colonies; and 47 from foreign countries. Among the degrees conferred were Bachelor of Medicine and Bachelor of Surgery, 177; Doctor of Medicine, 80; Master of Surgery, 3; The diploma in tropical medicine and hygiene was conferred on two candidates; the diploma in psychiatry on three candidates. Two new chairs have in the course of the year been instituted by ordinances of the University Court, and the first incumbents have been duly elected, and entered upon their duties at the beginning of the current session. The first is the Robert Irvine chair of Bacteriology in the Faculties of Science and Medicine, to which Dr. James Ritchie has been elected; the second is the Moncrieff-Arnott chair of Clinical Medicine, to which Dr. William Russell has been elected. An important agreement has been entered into between the University Court and the board of management of the Royal Infirmary, establishing a close and intimate relationship between the University and the infirmary in respect to the work of the pathological department, and also regarding clinical arrangements in medicine, surgery, and gynæcology.

Edinburgh Royal Infirmary: Annual Report.

The annual report by the managers of the Edinburgh Royal Infirmary, which has just been submitted to the meeting of contributors, is all the more interesting in that the institution has now had a year's experience of the National Insurance Act. Of the total of the whole ordinary expenditure of the institution 44 per cent. was incurred in dealing with insured persons. The managers therefore consider that on this ground alone they have a very strong claim for a substantial measure of support from the Burgh Insurance Committee and the Approved Societies, and they await with interest the result of a conference with those bodies which will shortly be made public. The total number of patients treated during the year was 12,514, as against 12,691 the previous year, showing a decrease of 177. The average number of patients per day in the wards was 858. The percentage of deaths to patients treated was 6·9, and besides the patients treated in the wards, as enumerated above, there were 36,278 out-patients. The total ordinary income amounted to £36,033, which is an increase of £641 over the previous year, while the ordinary expenditure was £56,609, an increase over the previous year of £727. Besides the ordinary legacies and donations £1000 were given by Lord Glenconner for the purchase of radium.

Glasgow University Statistics.

The report of statistics relative to the University of Glasgow for the academical year from Oct. 1st, 1912, to Sept. 30th, 1913, has just been issued by the secretary of the University Court. During the year the teaching staff in all faculties consisted of 35 professors, 69 lecturers, and 88 assistants. Reference is made to the loss the University sustained in April by the death of Professor Samson Gemmell, of the chair of practice of medicine. The salaries paid to the principal and professors amounted to £27,186, to lecturers to £15,914, and to assistants and demonstrators to £7349. Pensions amounting to £5493 were paid to retired professors. The total number of matriculated students was 2835 (including 648 women), as compared with 2794 (including 681 women) in the preceding year. In the Faculty of Medicine there were 717 students, of whom 87 were women. The following degrees were conferred in the Faculty of Medicine: M.D., with honours, 6; with high commendation, 1; with commendation, 7; ordinary, 11; M.B., Ch.B. with honours 4, with commendation 9, and ordinary 77; M.B., C.M., ordinary, 2. This makes a total of 117 medical degrees. On Sept. 30th the number of members of the General Council of the University was 8546.

Report of St. Andrew's Ambulance Association.

The thirtieth report of St. Andrew's Ambulance Association states that during the year 10,879 calls were made on the wagons of the association, and that the total number of patients conveyed since the formation of the association was 137,147. In Glasgow alone the number of turns-out was 7248, involving 7333 cases. The turns-out represented an average of 19·85 daily, or, leaving Sundays out of the calculations, 23·15. Out of the total of 7248 turns-out 3585 were due to accidents and 3663 to cases of illness. Of the cases all the accidents and 1372 of the sickness cases were removed free of all charge to the beneficiaries. The wagons covered 38,919 miles during the year. During the past year also the association conducted and examined 677 classes in first aid to the injured and 103 classes in home nursing and hygiene.

Red Cross Exhibition in Aberdeen.

The Red Cross Exhibition, which was held in Aberdeen from Dec. 15th to 20th, was in every way, except from a financial point of view, a success. The hall where it was held and its various annexes were increasingly crowded as the week went on, and the various lectures were also well attended, though less interest was shown perhaps in them than in the various exhibits. The Countess of Aberdeen performed the opening ceremony, and later delivered a lecture on the world-wide nature of Red Cross work. Other lectures given were on the Care of Children, by Dr. A. E. Kidd, school medical officer, Dundee; Dust and Disease, by Dr. E. L. Collis, Home Office, London; How Babies are Cared for in Institutions, Day Nurseries, &c., by Dr. A. Dingwall Fordyce, Edinburgh; the Meaning of Red Cross Work, How All can Help It, by Sir George T. Beatson, chairman of the Scottish Red Cross Council; and Food and Energy, by Professor W. H. Thompson, Dublin. The total income for the week was £396 14*s.* and the expenditure was £546 14*s.*, leaving a deficit of £150, towards which it is hoped that the different public bodies will contribute. A committee has been constituted to consider the advisability of constituting a small travelling exhibition, such as has met with so much success in Ireland.

The National Insurance Act in the North.

Aberdeen has the largest drug bill in Scotland under the National Insurance Act. A return issued for the first six months of 1913 shows that insured Aberdonians on an average cost 1*s.* 11*d.* in drugs per year. Inverness comes next with 1*s.* 10*d.* per insured person, and the county of Aberdeen shows only 1*s.* 2*d.* per head. It has been noted that with its low death-rate Aberdeen need not have shown such a large average; but though a low drug bill would be far from a reflection on the medical men of any district showing it, it is still to the credit of the medical practitioners of both Aberdeen and Inverness that they have shown no disposition to secure the "floating sixpence" for themselves. In Aberdeen it has been agreed to raise the charge for patients suffering from tuberculosis and treated at the city hospital by the town council from 25*s.* per week to 30*s.* This has been agreed by the

Insurance Committee, it being understood that at the end of the year, as the expenses were greater or less, an adjustment would be accordingly made. The town council representatives also brought forward a proposal for an "after-care committee," which was unanimously agreed to, a subcommittee being appointed to draw up a constitution. Forfarshire practitioners have signed the agreement with the Commissioners of the National Insurance Act for the ensuing year under protest; hitherto they have declined to sign on the ground that they had not been paid the mileage dues for the past year in terms of agreement previously entered into. A subcommittee was appointed to draft an agreement setting forth the demands of the medical men, and this was submitted to the Commissioners, who, however, have refused to accede to these demands, which chiefly referred to mileage charges.

IRELAND.

The British Medical Association and Ireland.

THE recent decision of the British Medical Association to increase its subscription to 2 guineas is likely to have an unfortunate effect on its membership in Ireland. It is felt that the necessity for the increased subscription has arisen from causes with which Ireland is not greatly concerned. The struggle over the National Insurance Act in which the Association has been deeply engaged, and which has depleted its coffers, was undertaken mainly on behalf of the profession in Great Britain. The problems arising out of the Insurance Act in Ireland are quite different, and in solving them the profession does not expect much help from the British Medical Association. As a result, medical men in Ireland feel that, except for the journal, they received, and were likely to receive, very little return for their subscriptions. It is hoped that the inevitable decrease of membership of the British Medical Association in Ireland may lead to the Irish Medical Association becoming, as it was at one time, an efficient and representative professional organisation.

A Coroner and Medical Evidence.

A dispute arose a week or two ago at an inquest in Omagh, co. Tyrone, between a coroner and the jury on the question of calling medical evidence. The inquest was on the body of a child who had apparently died as the result of burns. The jury, having heard other evidence, demanded that the medical man who had attended the child after the accident should be called. The coroner, Mr. Andrew Leitch solicitor, stated that, as the case was a plain one, there was no need of medical evidence, and that he would run the risk of the surcharge if he called a medical witness. After an angry altercation the coroner left, having given the jury under charge to a constabulary officer. The jury was locked up for some five hours, the coroner visiting them at intervals. At the end of that time the coroner called as witness a medical man whom he had ordered to examine the body of the deceased. The medical man who had attended the child was not examined, although present in court. The coroner told the jury that it was his duty to tell them whether medical evidence was required or not. In the end a verdict was found. The coroner's view seems to me to be not borne out by Section 34 of 9 & 10 Vic., cap. 37. That statute gives full power to the jury to requisition the coroner to summon a medical witness if the jury is of opinion that the cause of death has not been satisfactorily explained. The requisition should, however, be in writing. If a coroner refuse to obey, or if he neglect such a requisition, he is to be deemed guilty of a misdemeanour.

Rainfall in Belfast in 1913.

During 1913 the total amount of the rainfall was 39·51 inches, as compared with 42·86 inches in 1912—that is, a decrease of 3·35 inches. The wettest month was January, while the driest was August. There were 183 days on which rain fell in Belfast during 1913. Comparing these figures with those published in last Saturday's *Times*, taken at the Royal Botanic Gardens, Regent's Park, we find that at the latter place during 1913 only 22·52 inches of rain fell on 156 days.

Belfast Health Statistics for 1913.

The annual statistics published by the Public Health Committee show that while in 1909 the number of notifications of scarlet fever were 355, they were in 1910 734; they increased in 1911 to 766, in 1912 to 916, and in 1913 to 2120. While in 1909 there were notified 195 cases of diphtheria, in 1913 the numbers were 369. In 1913, 153 cases of typhoid fever, 12 of typhus fever, 253 of erysipelas, and 28 of poliomyelitis were notified. In 1909 the total number of cases of zymotic diseases notified were 978, in 1910 they were 1362, in 1911 1448, in 1912 they reached 1436, and in 1913 the numbers were actually 2980, this enormous increase being due mainly to the tremendous epidemic of scarlet fever. The death-rate from all causes for 1913 (or for 50 weeks during that year) was 18·8. The death-rate from zymotics was 2·3, and from pulmonary tuberculosis 2·1, which is higher than during 1912, when it was 2·0.

Payment of Panel Doctors.

Much dissatisfaction exists among practitioners who are on the Belfast panel at the non-payment of their fees for medical certification. The Local Insurance Committee, immediately before Christmas, had the cheques made out, and had the permission of the Insurance Commissioners to issue them. But on the day after this sanction a telegram came from the Commissioners' office in Dublin ordering the Belfast Insurance Committee not to issue the cheques until further notice. On Jan. 2nd the Belfast Local Medical Committee unanimously passed a resolution protesting strongly against this action of the Irish Insurance Commissioners in preventing the payment by the Local Insurance Committee of these fees (which are from the middle of October, 1913, and are already earned), and requesting an immediate explanation. The Insurance Commissioners have since adopted another plan, and have ordered the Local Insurance Committee to send the cheques to the head office in Dublin with the accounts. In the meantime the medical practitioners await their payment.

Jan. 6th.

PARIS.

The Prophylaxis of Leprosy in France.

LEPROSY in France is engaging the attention of the Conseil Supérieur d'Hygiène. This disease, which had almost disappeared, has of late shown disquieting recrudescences. Small foci have always been in existence—in Brittany, around Guingamp, near Lannilis, in Provence, and on the Franco-Italian frontier. It is even found on the central plateau. The Académie de Médecine is much disquieted over the cases between Nice and the Alps, which, though not numerous, increase regularly

year by year. In Paris, where there used to be perhaps 50 cases, there are now 300. This recrudescence appears due to the return home of those who have contracted the disease abroad. Dr. Marchoux, chef de service of the Institut Pasteur, has been directed to report on the question. In his opinion the mode of transmission of leprosy is not yet sufficiently clear, and the only effective measure at present is absolute isolation of the patient, such as was practised in the Middle Ages. Should the family desire it, however, this isolation can be carried out at home under medical supervision. Foreign lepers are not to be allowed to enter France, and those already domiciled there must either submit to the French regulations (at the cost of their country of origin) or be expatriated. The propagation of the disease by rats also demands attention. From his own investigations M. Marchoux affirms that 5 per cent. of the sewer rats are affected. A special commission on leprosy is about to be established at the Ministry of the Interior.

Cerebro-spinal Meningitis.

Cerebro-spinal meningitis has again broken out in France, among the garrison of the 136th Regiment at St. Lô, and at Brest. The first case was found at St. Lô at the end of November. The disease was demonstrated micro-biologically, and treated rigorously. All bacillus carriers, of whom 19 have been discovered, are under observation in hospital. Up to date there have been five cases with one death, all in October recruits. At Brest the first case broke out abruptly at the end of December, and within 48 hours two deaths had occurred. Strong measures are being taken to repress the disease.

The Mechanism of the "Knock-out" Blow.

Dr. Somen advances a theory of the mechanism of the phenomena attending the "knock-out" blow on the lower jaw in boxing. These phenomena have been variously attributed to a sudden displacement of the brain or the cerebro-spinal fluid, or to reflex inhibition. Dr. Somen's theory is that the shock of the blow on the chin is transmitted through the temporo-maxillary articulation to the internal ear, where the disturbance of the semicircular canals gives rise to vertigo, loss of equilibrium and of consciousness. The interference with equilibration is even more pronounced when the blow is received on one side, which accounts for the more severe effect of such a blow over one received in the middle of the chin. Physiological experts, like Dr. Babinski, and medical experts in sports, such as Dr. Heckel, who have themselves experienced the effect of this blow, have approved of Dr. Somen's theory. The dangerous points for the boxer are those whence reflexes take their origin—the epigastrium, from its relation to the solar plexus, and the lower jaw from its relation to the semicircular canals of the internal ear. The anterior surface of the larynx should also be mentioned, a blow on which may induce a fatal reflex, but this blow is ruled out in boxing and is practised only by the apaches, who appear to have imported it from the African Kabyles.

Assistance in Childbirth.

The new law for the assistance of women in childbirth, carried six months ago through the perseverance of Senator Strauss, a member of the Académie de Médecine, came into force on Jan. 1st. Henceforth every woman who claims the benefit of the law must make a declaration in writing, signed by herself or attested by two witnesses, to the mayor of her commune. In the case of those mentally incapable the claim can be made by the mayor with the aid of two witnesses. If the patient is at the time in hospital her claim must be passed by the head of the institution, and must state that she is of French nationality and that she works at her own home or in someone's establishment for a wage. It must indicate her family responsibilities and her resources, especially whatever accrues from her husband's work, during her rest. She must furnish a note showing what contributions she (or her husband) pays, as well as a certificate from her employer stating that she works at a regular wage. The mayor forwards these documents after due inquiry to the Bureau d'Assistance, which has the right to institute a control inquiry. This bureau draws up a list of the applicants, the first part containing those who have their families in the commune, and the second those who belong elsewhere. This last list is addressed to the prefect by the mayor. The assistance is furnished only for the period preceding or following the particular accouchement for which the application was made, and application must be renewed for each confinement. Finally, a medical certificate that a rest period is absolutely necessary and mentioning the approximate date of confinement is required. The date on which the benefit comes into force is fixed by the mayor, but may also be determined apart from him by the prefect. The relief is payable after the confinement, even though the child be born dead. For each assisted woman a person is appointed by the mayor from a list, drawn up at the commencement of each year by the Bureau de Bienfaisance, of persons who are willing to act as inspectors of these patients. At the expiration of the period of assistance this person must state whether the mother has nursed her child at the breast. The benefit can be withdrawn on the decision of the mayor or the prefect if the woman does not conform to the regulations. The amount, which is fixed by the Conseil Municipal, is from 1 to 2 francs a day.

Death of an Interne from Typhoid Fever.

M. Théry, a young interne who had charge of the typhoid patients in the service of Dr. Macaigne at one of the Paris hospitals, recently succumbed in eight days to typhoid fever, in spite of the most assiduous attention. During the prodromal stage, while suffering from headache and slight fever of which the cause was not yet recognised, he had the misfortune to prick his hand in making a post-mortem examination. This death has caused no little excitement, in consequence of the campaign now being waged against typhoid fever. M. Théry had not had himself vaccinated against the disease, but it is thought that this occurrence will cause antityphoid vaccination, which is at present optional, to be made compulsory in the *personnel* of the hospitals.

Death of Dr. Louis Jullien.

Dr. Louis Jullien, who has recently died after an illness extending over about 15 years, was a distinguished syphiligrapher. He was an *agrégé* of the Faculty of Lyons, but was settled in Paris, where he was physician to the venereal detention wards of Saint Lazare. He wrote numerous works on venereology and contributed largely to the introduction into France of the treatment of syphilis by injections of calomel.

Obituary.

SILAS WEIR MITCHELL, M.D., LL.D.

THE veteran American physician and author, Dr. Weir Mitchell, died at his residence in Philadelphia on Jan. 4th in his eighty-fifth year.

Silas Weir Mitchell, who was the son of Dr. John Kearsley Mitchell, himself an author as well as a medical practitioner, was born in Philadelphia on Feb. 15th, 1829. After a grammar school education he went to the University of Pennsylvania to pursue his classical studies. He took his M.D. degree at Jefferson College, Philadelphia, in 1850, and started the practice of medicine in his native city. During the American Civil War he was placed in charge of a hospital there especially established for the purpose of treating the nervous sequelæ of wounds, and the foundation was thus laid of his future reputation as a nerve specialist. The widely known "Weir Mitchell treatment" in nervous diseases, which consists essentially of rest and complete isolation, is credited to him, and he deserves a full recognition of the fact that he perfected this system, and by his writings and practice led to its adoption in certain conditions. The principles involved had been recognised and followed by many medical men at an earlier period. Among his works on nervous diseases should be mentioned Wear and Tear (1871), Diseases of the Nervous System (1881), and Clinical Lectures on Nervous Diseases (1897). He also made some investigations in regard to snake poisons, anæsthetics, narcotics, and anodynes, and other departments of physiological and medical science. To general literature also Dr. Weir Mitchell made some creditable contributions. He published several novels, of which perhaps the most widely and favourably known is "Hugh Wynne, Free Quaker" (1897), in which he depicts with considerable insight the mental attitude, the life, and manners and customs of the people of his native city at the time of the revolutionary war. His first venture in extra-professional literature which attracted any attention was "Hephzibah Guinness," published in 1880; his last "John Sherwood, Ironmaster," in 1911. He wrote, also, several short stories and some poems, among others "The Masque," a poetic drama, which was staged by the late Mr. Wilson Barrett.

Perhaps the most striking lessons of his work are the evidence it affords that success in no field need be despaired of because it delays its appearance until well on in middle life (for his first really successful novel was published when he was 68) and the compatibility of a simultaneous devotion to both literature and the exacting profession of medicine. Many members of our profession have distinguished themselves in various fields outside of it, but such distinction has for the most part been achieved at the expense of their working interest in medical science. Dr. Weir Mitchell used his literary tastes as a means of diversion only in his leisure.

Dr. Weir Mitchell was a foreign member of the Royal Society, an honorary Fellow of the Royal Medical and Chirurgical Society of London, and honorary foreign Associate of the Académie de Médecine and of the corresponding Swedish and Norwegian Academies. Harvard, Princeton, Toronto, and Edinburgh Universities conferred on him their LL.D. degrees, and the University of Bologna its honorary M.D. He had also been President of the College of Physicians of Philadelphia. He died full of years and honours.

BERTRAM THORNTON, M.R.C.S. ENG., L.R.C.P. LOND., J.P.

Mr. Bertram Thornton died at his residence in Margate on Dec. 28th, 1913, in his fifty-seventh year. He received his medical education at St. Mary's Hospital, London, and at Edinburgh, and qualified as M.R.C.S. Eng. and L.R.C.P. Lond. in 1881. After holding the posts of house surgeon and house physician at St. Mary's Hospital he settled in practice in Margate, his native town, where he entered into partnership with his father, whom he ultimately succeeded. He held many appointments, among them those of consulting surgeon to the Royal Sea-Bathing Hospital, and honorary surgeon to the Margate Cottage Hospital. On his retirement from the staffs of these hospitals he was elected a member of their governing committees, to which his intimate knowledge of hospital requirements and management was of great service, and on which he served till his death. To him was largely due the enlargement of the Margate Cottage Hospital in commemoration of Queen Victoria's Jubilee, a scheme to which he devoted much time and energy, and of which Margate is justly proud. He was also police surgeon, medical officer to the Post Office and the Deaf and Dumb Asylum, and school medical officer.

In public health work he was honourably known. He was medical officer of health for the borough, in which capacity he was associated with the radical changes in the sanitation of Margate, which have made that borough one of the healthiest in the kingdom. He particularly supported the Wingham water scheme, under which Margate now gets its ample supply from 14 miles inland. During the time he served the borough the Town Planning Act was adopted, a refuse destructor erected, infant mortality steadily decreased, and a school clinic was established, in effecting all of which improvements his energy and organising capacity proved of the greatest value. He was, like his father before him, on the commission of the peace for the borough, and served for many years on the town council.

Mr. Thornton's health was undermined by repeated attacks of influenza, which put him on the sick list for months at a time. He leaves a widow and four daughters. He will be greatly missed not only by them, but by his medical colleagues, his patients, and his fellow townsmen, among whom his kindly disposition, sincerity, and unfailing courtesy made him greatly esteemed.

JOHN MEREDITH, M.D. EDIN., L.R.C.P. EDIN., J.P.

Dr. John Meredith, of Wellington, Somerset, died recently at Llandrindod Wells, where he had gone on a visit to his sister. The deceased, who was in his 84th year, received his medical education at Edinburgh University and graduated M.D. in 1861, having taken the L.R.C.S. Edin. the year previously. After holding resident appointments at the Edinburgh Royal Infirmary, the Morningside Asylum, and the General Hospital at Demerara, Dr. Meredith commenced practice at Wellington, where he soon obtained a large connexion. He was for many years medical officer of health for the urban district, medical officer to the workhouse, and certifying factory surgeon. He took a great interest

in all local matters, and for about ten years represented Wellington on the Somerset county council. He was a magistrate for the county, and surgeon-lieutenant-colonel of the 2nd V.B. Somerset Light Infantry, V.D. (retired). Dr. Meredith will be much missed in Wellington and the district, for he was greatly respected.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Warren O. Plimpton, formerly professor of surgery in the New York Post-Graduate School and Hospital.—Dr. L. Ewer, of Charlottenburg, Sanitary councillor.—Dr. O. Kessler, of Berlin, Sanitary Privy Councillor.—Dr. Louis Jullien, formerly surgeon to the St. Lazare Hospital, Paris.—Dr. G. Viguier, professor agrégé of parasitology in the Algiers Medical School.—Dr. Elie Faivre, formerly physician to the Lyons Hospitals.—Dr. G. Juffinger, extraordinary professor of otology and laryngology in the University of Innsbruck, aged 60.—Dr. F. Krug, senior staff surgeon of Munich.—Dr. Pascual Gentile, of Buenos Aires, an Italian graduate who was looked upon as an authority on malarial fevers.—Dr. Camille De Clerco, president of several of the medical and scientific societies of Ghent.—Dr. Ernest Snoeck, honorary president of the Belgian Provincial Medical Commission.

Correspondence.

"Audi alteram partem."

THE RESPONSIBILITY OF THE MEDICAL PROFESSION AS REGARDS ANTI-TYPHOID INOCULATION.

To the Editor of THE LANCET.

SIR,—As a worker in the tropics in the ubiquitous position of a civil surgeon, and one therefore who has to deal with almost every variety of patient and disease, I would like to make a most urgent appeal and protest to all medical men in Great Britain.

It has been my fortune to deal with many new arrivals in the tropics, including officials, missionaries, business men, &c. Many of these have come or been sent by their superiors to be inoculated against typhoid. Others, when I have asked them if they have been inoculated, have said, "My doctor at home does not believe in anti-typhoid inoculation and thinks it useless." This latter statement by a professional brother ignorant of tropical work and conditions thrown at the head of one who has seen so many terrible tragedies from the want of inoculation makes it imperative that I should protest as publicly as possible against what I can only consider as loose talk and the want of realisation on the part of the medical man as to how some patients take in, dwell on, and misconstrue any general statement made by a doctor. Unfortunately, the terrible responsibility of the above (to me wicked) advice cannot be brought directly on to the head of him who gave it, when these tragedies occur. Talking this matter over with my friends in the Royal Army Medical Corps stationed here, they have assured me that my experience is not unique, and that they also have come across many such cases.

In conclusion, I would ask any medical man who is a sceptic as regards the value of antityphoid inoculation to study the statistics issued by the Royal Army Medical Corps, and those of the Director General of the United States Army Medical Department. I am also sure that the Director of the Royal Army Medical College, Millbank, would supply information to any one really interested in knowing the real truth.

I am, Sir, yours faithfully,

C. MADDOCK, M.D. Edin., F.R.C.S. Edin.,
Major, I.M.S.

Ahmednagar, India, Dec. 19th, 1913.

"THE DANGERS OF STERILISED MILK."

To the Editor of THE LANCET.

SIR,—The line printed above this is the heading of an important article in the *Times* of Dec. 29th, in which Mr. Robert Mond had a good deal to say against the practice of sterilising the cow's milk on which children are fed. The heading may possibly have surprised or even alarmed some people; others it may have pulled up short and caused them to think, for sterilisation of children's milk is still widely believed in as necessary. It is, indeed, part of the ritual of most nurseries.

The question of the expediency or the necessity of the practice, however, cannot conveniently be entered into by medical men in the public press (though I for one am grateful to the *Times* for bringing the matter forward, as well as for the way in which it has been done), and I hope that THE LANCET will be inclined to open its columns to a discussion on the subject.

I do not know when the sterilisation of nursery milk was first advised, but it is easy to see how it came about. Thus, cows are liable to tuberculosis; milk from a tuberculous cow may give rise to tuberculosis in the human subject; the germs of tuberculosis are killed by a heat somewhat below that of boiling water; children may be fed on milk thus treated without risk of their being infected with the germs of tuberculosis, even if the milk be drawn from tuberculous cows. It is very simple and attractive.

But we do not yet know for certain that milk from a tuberculous cow will infect a human being. Mr. Mond says that children have been reared on unsterilised milk from cows which have afterwards been found to be tuberculous, and have been none the worse for it. He also reminds us that our post-mortem records reveal the fact that tuberculous children are infected by the air-passages rather than by the stomach or bowel. He also tells of certain kittens which, being fed wholly on sterilised cow's milk, died miserably; whilst others, used as a control and fed on plain cow's milk, grew up and flourished. This was a valuable vivisection experiment, and it is to be hoped that by planning it and seeing it carried out, Mr. Mond will not have attracted the suspicion or violence of any of his friends.

Of the biochemistry of the sterilisation of milk I am not competent to speak, but I do know this, that during the process it has been strangely altered, for its taste is quite different. The milk has been changed from a living fluid to a dead one. To the adult this may not signify much, but for the child it may make all the difference, the milk having lost its *living spirit*. What exactly this living spirit of milk may be the chemist is unable to tell us. At any rate, he cannot separate it in his test-tube nor weigh it in his most delicate balance. Yet it exists. Perhaps the physiologist, who is less of a materialist, can make a guess as to its nature. Otherwise it must be left to the medical man to predicate concerning it.

My own opinion is that sterilisation renders cow's milk unsuitable as a food for young children. I

am half inclined, indeed, to use the word *dangerous*. I have closely watched infants whose only food has been sterilised cow's milk, and have found many of them poor and ill-nourished, and just in the condition to fall victims to tuberculosis. Later on, I have detected in them the early signs of rickets. In others I have found the tender bones and the spongy or bleeding gums of scurvy. But as soon as the sterilisation of the milk was stopped improvement set in and was continued.

I am, Sir, yours faithfully,

EDMUND OWEN,
Consulting Surgeon to the Hospital for Sick Children, Great Ormond-street, W.C.
Upper Berkeley-street, W., Jan. 5th, 1914.

*** When Mr. Owen says that "we do not yet know for certain that milk from a tuberculous cow will infect a human being," we must point out that certain knowledge of a negative event is almost impossible to come by. All the admirable work done for the recent Royal Commission on Human and Animal Tuberculosis, and the recommendations of that Commission, support the view that infection of the human subject by the tuberculous cow can and does occur.—ED. L.

ON THE PATHOLOGY OF RHEUMATOID ARTHRITIS.

To the Editor of THE LANCET.

SIR,—Two articles have recently appeared in THE LANCET which seem to me to have an important bearing on the etiology and pathology of rheumatoid arthritis. One, an annotation headed "Periarthritis after Herpes Zoster,"[1] the other on "The Primary Cause of Rheumatoid Arthritis," by Dr. H. Warren Crowe,[2] and I shall be obliged if I may, as briefly as possible for the present, point out their significance.

In the annotation reference is made to a case reported by M. Georges Guillain and M. Daniel Routier to the Société Médicale of Paris on Oct. 31st, in which chronic periarthritis of the hand followed herpes zoster of the dorsal aspect of the left hand and of the forearm, the eruption, associated with continuous pain and stiffness of the finger-joints, lasting 15 to 18 days, and for a long time afterwards there was œdema of the hand. When the pain ceased the stiffness of the joints remained, and the hand could not be used. After two years there was some improvement, but the hand could not be shut. Further details are given, and reference is made to other cases reported by M. Guillain and M. Pernet in 1910, and M. Claude and M. Velter in 1911, of "zona of the upper limb followed by lesions resembling arthritis deformans."

Now these cases seem to me to illustrate and confirm in a remarkable manner the view which I have held for many years that the progress of arthritis deformans is associated with and dependent upon irritative or destructive lesions of the anterior cornua of the spinal cord, the lesions being especially marked in the cervical and lumbar enlargements.

According to von Bärensprung, zona is the result of inflammation of the intervertebral ganglion on the root of the nerve from which are derived the branches distributed to the part of the skin on which the eruption appears. The ganglion is found to be swollen, congested with blood, softer and redder than natural. The blood-vessels are engorged, and the tissue under the microscope exhibits minute hæmorrhages which press upon and destroy the ganglion cells. The researches of Head and Campbell also indicate that the disorder is associated with hæmorrhages and inflammatory foci in the ganglia of the posterior roots, with destruction of the ganglion cells of the nerves supplied to the affected part.

It is not unreasonable to assume that in some of these cases the irritation caused by the inflammatory or other changes in the ganglion cells of the posterior roots may give rise to changes in the ganglion cells of the anterior horns and in the anterior nerve roots; in the same way as irritation of the peripheral end of afferent nerve fibres by reflex action will cause a nervous stimulus to pass along the efferent fibres proceeding from the anterior cornua. In this way the nutrition of the muscles, bones, and joints over which the ganglion cells of the anterior horns are supposed to exercise a controlling influence will be modified and produce the changes associated with rheumatoid arthritis in the limb to which the affected nerve is distributed.

On these grounds I urged 12 years ago[3] that the most effective treatment of rheumatoid arthritis is by blistering the spine, especially in the regions of the lumbar and cervical enlargements of the cord, and consequently I think that, in the case reported by M. Guillain and M. Routier, the careful application of cantharides ointment on each side of the seventh cervical vertebra would have been followed by a marked decline of the arthritic trouble. Of course, as the patient suffered from diabetes more than ordinary care would be necessary in applying the counter-irritation. Full details as to carrying out this plan of treatment are given in the Proceedings of the Royal Society of Medicine, May, 1910 (Balneological Section), p. 109.[4]

Dr. Warren Crowe's paper on the Primary Cause of Rheumatoid Arthritis is, I venture to say, one of the most important and suggestive that have lately appeared on the subject. The fact that in almost all cases he has been able to discover and isolate a new streptococcus in the urine bearing a close relationship to micrococcus epidermidis, and that the administration of a vaccine prepared from this to individuals suffering from rheumatoid arthritis has been followed by the relief and cure of the disease, is very strong evidence that there is some relationship between the streptococcus and the disease, more especially when similar beneficial results have been obtained by other observers.

But the question immediately suggests itself, In what way does the avirulent micrococcus epidermidis of the skin acquire pathogenic power? With all due reserve I venture to suggest that it arises from the presence in the blood stream of the products of imperfect metabolism of the muscular and other tissues; and that this imperfect metabolism is due to changes in the circulation resulting from irritation in various parts of the body of the afferent nerves, and so bringing into play the action of the vaso-motor nerves, as may be illustrated by the effects resulting from section of the sciatic nerve, and irritating the peripheral end. Division of the sciatic nerve causes dilatation of the small arteries of the foot and leg, whereas irritation of the peripheral end of the divided nerve gives rise to constriction, the effect varying according to the interval which has elapsed after section of the nerve. Irritation of

[1] THE LANCET, Nov. 29th, 1913, p. 1560.
[2] THE LANCET, Nov. 22nd, 1913, p. 1460.
[3] THE LANCET, April 6th, 1901, p. 1000.
[4] THE LANCET, Sept. 24th, 1910, p. 927.

any sentient part of the body will induce an afferent impulse ascending by the posterior roots of the nerve through the spinal cord to the brain, and cause a reflex and efferent impulse to descend along those fibres of the cord which pass out by the anterior cornua and anterior roots of the nerve. These contain both motor and vaso-motor fibres, and by the action of the latter there will be constriction of the small arteries, a diminished supply of blood, and consequently of oxygen, to the part, and as a result imperfect oxidation and imperfect metabolism of the tissues, morbid substances being formed and passing into the blood to be eliminated by the various excretory organs. If not excreted it is conceivable that the avirulent micrococcus epidermidis cultivated in such a medium may undergo some change in its constitution, become pathogenic, and present the characters of the micrococcus deformans, the toxin of which may irritate the afferent nerve fibres or the posterior roots and so develop the changes (or intensify pre-existing ones) in the ganglia of the anterior cornua, upon which I believe this disorder depends.

I hope before long to develop this view more fully. If the theory is true it is applicable also, with some modifications, to acute rheumatism and gout, but, most important of all, it indicates how in some measure an avirulent microbe may become pathogenic.

Upwards of 30 years ago Sir James Paget wrote: "Disturbances in the nervous system in some part and form may be regarded as a factor in every case of gout. There are reasons enough for thinking that changes in the nervous centre determine the locality of each gouty process, while changes in the blood and tissues determine its methods and effects: and that thus we may explain the symmetries of disease in gout—sometimes bilateral, sometimes antero-posterior—and thus its metastases." This quotation, I hold, is equally applicable to the pathology of acute rheumatism and of rheumatoid arthritis.—I am, Sir, yours faithfully,

P. W. LATHAM.

St. James' Court, Buckingham Gate, S.W., Dec. 30th, 1913.

BIG GAME AND SLEEPING SICKNESS VERSUS MAN AND HIS ANIMALS.

To the Editor of THE LANCET.

SIR,—In reference to Dr. Warrington Yorke's letter in THE LANCET of Jan. 3rd I quite agree as to Taute's experiment that no generalisation should be made from one fact. My phrase "goes to prove" was not intended to mean this. To be more explicit, allow me to enlarge it thus, "tends to prove for what it is worth," and this it certainly does. Dr. Yorke says that this experiment shows that healthy human beings are able to a great extent to resist infection, and later that the disease has proved invariably fatal. Do these two statements lie comfortably alongside each other?

Considering all the points raised I am at a loss to understand why the would-be slaughterers of the game cannot be satisfied with an experiment over a fenced area of a few square miles, instead of a general massacre by the natives and others that is advocated. Such an experiment would be likely to teach us a great deal if the money could be found.

I am, Sir, yours faithfully,

Harley-street, W., Jan. 3rd, 1914. SHEFFIELD NEAVE.

THE CENTENARY OF SIR JAMES PAGET.

To the Editor of THE LANCET.

SIR,—I think it will interest your readers to learn that as Sunday next, Jan. 11th, is the centenary of the birth of Sir James Paget, the occasion is being specially commemorated in the parish church of Great Yarmouth, with which Sir James Paget and his family were intimately connected. His son, the Bishop of Stepney, is preaching throughout the day, and the morning service will be attended by the mayor in state and the aldermen and councillors of the borough, the naval and military forces stationed in the town, and by a body of doctors and nurses. There will also be present the Master of Downing, Professor of Surgery in the University of Cambridge, and delegates from the Norwich Medical Association and from several scientific societies.

I am, Sir, yours faithfully,

C. LISLE CARR,

Yarmouth, Jan. 6th, 1914. Vicar of Great Yarmouth.

THE GENERAL MEDICAL COUNCIL AND APOTHECARIES' HALL OF IRELAND.

To the Editor of THE LANCET.

SIR,—My Board having taken the view that the recent action of the General Medical Council in transmitting charges against the Apothecaries' Hall to the Privy Council was unconstitutional, beg to enclose for your information the following letter from the Privy Council.

I am, Sir, yours faithfully,

HENRY W. MASON, L.R.C.S.I.,

Mary-street, Dublin, Jan. 2nd, 1914. Registrar.

[COPY OF LETTER RECEIVED FROM PRIVY COUNCIL, JAN. 1ST, 1914.]

The Clerk of the Council, Privy Council Office,
London, S.W., Dec. 31st, 1913.

SIR,—Referring to your letter of the 22nd inst., I have to state that no useful purpose would be served by submitting to the Lords of the Council the reply of the Apothecaries' Hall of Ireland to certain charges made by the General Medical Council, since the matter in question is not before their Lordships.

I am, Sir, your obedient servant,

The Secretary, Apothecaries' Hall of Ireland, Mary-street, Dublin. ALMERIC FITZROY.

A PROPOSED PRIVATE HOSPITAL.

To the Editor of THE LANCET.

SIR,—A good deal of attention is now being directed to the question of private surgical or medical homes for the middle classes, and it is likely that increasing attention will be devoted to the subject in the near future.

In his letter on the subject in your issue of Jan. 3rd, with the above title, Dr. A. B. Bradford states that the remedy required at the present time is to build a large central private hospital for paying patients—to establish, in fact, a hotel for sick people in place of the existing lodging houses. He further indicates that it must be centrally situated in order to be convenient to patients and medical men, and it must be capable as to price of housing all a medical man's cases who can afford fees; and, as far as accommodation goes, must begin where the hotel has left off, and not where the hospital has stopped.

It may be of interest to Dr. Bradford and to others interested in the subject to know of the existence of the Queen Mary Nursing Home in

Edinburgh. This institution was planned to give patients of moderate means the comforts, appliances, and conveniences which are provided gratuitously at hospitals for the poor. It contains 45 beds, and its development was made possible by the coöperation of the medical profession and the public. It is not run for profit and is intended to be self-supporting. It is arranged to admit cases paying at the rate of from £1 1s. per week for board and nursing to £3 3s., patients paying the latter fee only having a room to themselves. Previous experience of a similar home run on a small scale had justified the belief that such a home could be self-supporting, and it is gratifying to find that as a result of its first six months' working there is a very substantial balance on the right side.

The Queen Mary Home has already attracted considerable attention, having been visited by many medical men and others interested from other centres. The correctness of the principle underlying the establishment of this home may be regarded as established, and it is probable that, alike in the interests of the profession and of the public, an extension of such a scheme will be widely adopted in the future.

I am, Sir, yours faithfully,

Edinburgh, Jan. 5th, 1914. CHALMERS WATSON.

THE PHOSPHORUS CONTENT OF RICE.

To the Editor of THE LANCET.

SIR,—I am at present having to deal with an epidemic of beri-beri in the British regiment at this station. The disease, so far as can be found out, has not been described as occurring in the Sudan before.

In the course of investigations as to the possible cause attention has been paid amongst other things to the rice, though that is not regarded as the probable cause of the present outbreak, as rice is not a large constituent of the soldiers' food.

On referring to an article on the subject in your issue of July 26th, 1913, p. 236, an annotation on beri-beri in Siam and the work of Dr. H. Campbell Highet and others, I find the following statement: "The phosphorus content of a rice should not be less than 4 per cent., and this should be taken as the indicator of the safety or otherwise of the rice."

The figure mentioned is obviously a typographical error, and I should be much obliged if you would kindly inform me what the correct figure is.

Dr. Beam, research chemist at the Wellcome Tropical Research Laboratories, has kindly analysed for me the rice issued to the troops here, and his figure for phosphorus is 0·13 per cent. This rice is the ordinary polished rice.

I am, Sir, yours faithfully,

British Barracks, Khartoum (Sudan), Dec. 27th, 1913. A. D. STIRLING, Captain R.A.M.C.

*** We regret very much to have overlooked the obvious misprint. The figure should have been, as Captain Stirling has correctly surmised, 0·4.—ED. L.

THE ATROPINE TREATMENT OF SEA-SICKNESS.

To the Editor of THE LANCET.

SIR,—*Apropos* the advocacy of atropine in sea-sickness by Fischer, alluded to last week in an annotation in THE LANCET, I should like to say that I have found the hypodermic injection of sulphate of atropine to be the most reliable cure for sea-sickness I have ever tried. In 1906, when travelling for my health as surgeon in charge of a liner, I met an American physician who told me of this remedy, and I can strongly support Fischer's opinion as to its value. The milder cases do not often come under the notice of the surgeon, whose time is pretty fully occupied when in charge of from 1500 to 2000 people, and who has to act as surgeon, physician, bacteriologist, anæsthetist, and sometimes nurse. When called to a bad case of sea-sickness my plan was to give one-hundredth part of a grain of atropine sulphate hypodermically and repeat if necessary in an hour or two; often the sufferer would sleep a few hours, possibly because he had been without sleep for some time, and would then come up on deck and have no return of the sickness. I can endorse Fischer's opinion that relapses were not common and that one injection frequently cured.—I am, Sir, yours faithfully,

REGINALD POLLARD, M.B. Durh., D.P.H., &c.

South Kensington, Jan. 6th, 1914.

INSTRUCTION IN THE NATURE OF ALCOHOLISM.

To the Editor of THE LANCET.

SIR,—May I ask you for space to endorse emphatically Dr. Hugh Wingfield's appeal for instruction for the rising generation of medical practitioners on the nature and proper treatment of alcoholism? It is essential that old and provedly erroneous theories as to cause and treatment of delirium still to be found in medical text-books should cease to be taught, and the more modern and proved theories taught in their place. If alcoholism and its victims are to receive proper attention, which they are not getting at present, the nature of alcoholism must be understood, as at present it most emphatically is *not*, by the bulk of general practitioners. The differential diagnosis between dipsomania, pseudo-dipsomania, and chronic alcoholism must be understood and the treatment appropriate to each applied. Lastly, the profession must be taught, in order that they may in turn teach the laity, that this or that combination of drugs, while good so far as it goes in selected cases, or mere isolation from alcohol with or without drugs, while also of benefit so far as it goes, is not, without psychic treatment in its widest sense, sufficient or efficient treatment of alcoholism; and that imprisonment or the infliction of fines (the latter usually paid by long-suffering friends and relations) for drunkenness is as harmful as it is futile.—I am, Sir, yours faithfully,

J. W. ASTLEY COOPER, L.R.C.P. Edin., Medical Superintendent, Ghyllwoods Sanatorium, near Cockermouth, Cumberland.

Jan. 5th, 1914.

THE NATIONAL INSURANCE ACT: THE SURPLUS FUND.

To the Editor of THE LANCET.

SIR,—As the panel practitioners have evinced considerable interest since the publication of my letters to the press *re* the disposal of the so-called surplus fund, they would, I believe, like to learn whether I have any further developments to announce.

1. Mr. Dawes, the chairman of the London Committee, writes to say that he has no authority to accept any legal notice on behalf of the Committee, but that all formal communications should be addressed to the clerk of the committee.

2. The chairman of the London Panel Practitioners' Committee writes as follows:—

I may say that our committee do agree that the doctors who accepted insured persons after April 15th should be

paid in full, and I can assure you that we shall see that this is done. We also intend to submit a scheme for the equitable distribution of the unallotted residue.

3, Dr. Beaton has also sent me a letter which, although not confidential, contains matters of a controversial nature (other than the main point at issue), in regard to which I have asked him to defer the discussion till after the panel doctors have been paid their legitimate dues, when the unallotted residue alone will remain to be dealt with. I am, Sir, yours faithfully,

Tooting, S.W., Jan. 5th, 1914. EDWARD NUNDY.

*** Previous communications from Mr. Nundy are referred to in another column (p. 149).—ED. L.

DISLOCATION OF THE PROXIMAL PHALANX OF THE GREAT TOE.

To the Editor of THE LANCET.

SIR,—In an annotation in THE LANCET of Jan. 3rd on the subject of dislocation of the proximal phalanx of the great toe this lesion is described as one of extraordinary rarity. It may therefore possibly interest those who have collected or may be about to collect statistics on this dislocation to know that an instance of it is recorded in the surgical registers of St. George's Hospital for April, 1904, under the distinguishing number 696 S.R. The injury was sustained in a fall from a wall, and the patient died a few days later from head injuries sustained at the same time.—I am, Sir, yours faithfully,

HENRY ROBINSON, M.D. Cantab.

Brechin-place, S.W., Jan. 5th, 1914.

THE NATIONAL INSURANCE ACT.

MEDICAL BENEFIT AND THE NEW YEAR: THE CARD SYSTEM.

IN response to numerous medical representations that insured persons should be provided with vouchers, the English Insurance Commissioners have adopted a Medical Card system which is described in a leaflet (Memo. 189/I.C.). Besides affording a ready means of identification of his panel patients by a practitioner without the necessity of examining his card index list, the voucher provides an opportunity for imparting to insured persons information and instructions as to the procedure necessary for obtaining medical benefit and the rules which must be observed. The Commissioners anticipate that the Medical Card system will facilitate the work of medical practitioners and the administration of medical benefit generally; while it should assist Local Insurance Committees to secure more accurate registration of the insured persons in their area and consequently more equitable remuneration of practitioners. Approved Societies will probably avail themselves of it for the purpose of informing their members that red medical tickets and forms Medical 32 are no longer available for the purpose of choosing a doctor or institution and will not be accepted. The new medical card is in itself a document which will require a good deal of study before the insured person masters its details, but will be found when duly studied to provide for all the more likely contingencies.

The card is of buff colour. It is a double fold card, measuring $4\frac{1}{2}$ inches by $3\frac{7}{16}$ inches when doubled, and contains on the front page blank spaces for written particulars of the insured person and the name of the medical attendant. The second page contains general instructions. The third page contains blank forms of application to be placed on a selected practitioner's list by an insured person who has hitherto failed to make his choice or has moved into another district, together with spaces in which the practitioner can indicate that he intends to claim for mileage or to supply drugs. On the fourth page is a summary of the rules as to the conduct of insured persons in relation to their medical attendant, also a form of application for medical treatment during temporary residence away from home, and a space for the signature of the practitioner agreeing to give such temporary treatment. Thus there are spaces to be made use of: (*a*) when the patient is not on the list of a doctor and wishes to choose one; (*b*) when he has removed altogether to a new address and therefore cannot get treatment from the medical man named on the front page; (*c*) when he is temporarily residing in a new locality where he does not expect to remain for as long as three months from the date of his arrival. Circular 41/I.C. accompanying the card gives the information that the latter is to be obtained by new entrants to insurance on receipt by the Insurance Committee from the society of the index slip relating to the member. Persons already insured who have not chosen their medical man can get their medical cards by filling form Medical 50, and sending it to the Insurance Committee. Insured persons already on the list of a medical man will be furnished with medical cards by the Insurance Committee "in due course." When once an insured person has got his card he must be prepared to produce it to the medical man whenever treatment is required. Form Medical 50 has been referred to above; it has been issued simultaneously with the medical card and will require equally careful study before it is filled up by those whom it concerns. Circular 41/I.C. contains full particulars, besides those mentioned, as to the steps to be taken in connexion with the new system of Medical Cards, and also contains explanations and instruction relating to the obtaining of medical and sanatorium benefit by insured persons aged 65 or over on entry into insurance.

A particular Medical Card will enable the insured person to obtain treatment during temporary residence in one area only and from one doctor. On and after Jan. 12th next no insured person will be able to exercise choice without a Medical Card, and medical men should, therefore, not accept insured persons failing to present duly completed cards. The cards of patients accepted by him, when properly filled in, should be retained and signed by the practitioner and forwarded to his Insurance Committee. He should not take the Medical Cards of those whom he does not accept or who have failed to complete their cards. When the system is in full operation a practitioner on giving treatment will be entitled to require presentation of their Medical Cards by insured persons.

EXEMPT PERSONS' BENEFITS.

The National Health Insurance Joint Committee, acting jointly with the Insurance Commissioners and the Welsh Insurance Commissioners, have issued regulations to come into operation immediately under the title "National Health Insurance (Exempt Persons' Benefits) Regulations, 1913." Exempt persons are those holding certificates of exemption under Part I. of the principal Act, and the benefits to which they are entitled are medical

benefit and sanatorium benefit. Exempt persons in respect of whom not less than 20 contributions have been paid are entitled to the benefits, those making application to the Commissioners becoming so entitled six weeks after the date of their application and those not so applying at the commencement of the "benefit period" next after the end of the "contribution period" in which the twentieth contribution was paid in respect of them. Contributions paid in respect of exempt persons are to be carried by the Commissioners to an Exempt Persons' Fund, and provision is made for the transference of various amounts from this fund to the General Medical Benefit Fund, the General Medical Benefit Administration Fund, and the General Sanatorium Benefit Fund. Financial provision is made for the case of exempt persons entering into insurance as employed contributors and for securing sickness benefit for them.

THE COMPLIMENTARY DINNER TO DR. CHRISTOPHER ADDISON, M.P.

The dinner to Dr. Addison, M.P., at which the Chancellor of the Exchequer will preside, will be held at the Trocadero Restaurant on Tuesday, Feb. 3rd. The following have joined the committee:—Lord Sandhurst, Sir Clifford Allbutt, Sir Arbuthnot Lane, Sir Almroth Wright, Sir Victor Horsley, Sir Robert Philip, Sir Shirley Murphy, Colonel Sir William Leishman, the Right Hon. R. Farquharson, M.D., Professor Sims Woodhead, Professor Keith, Professor Arthur Thomson, Professor William Wright, Professor A. M. Paterson, Professor William Bulloch, Dr. F. W. Mott, Dr. Arthur Latham, Mr. Lenthal Cheatle, Mr. C. J. Bond (Leicester), Dr. Ewen Maclean (Cardiff), Dr. Adam Fulton (Nottingham), Mr. D. F. Todd (Sunderland), Dr. Buist (Dundee), Mr. C. E. Fleming (Bradford-on-Avon), Dr. Norman Walker (Edinburgh), and a considerable number of Dr. Addison's Parliamentary colleagues. Tickets for the dinner (price 7*s.* 6*d.*, excluding wine) should be applied for without delay. They can be obtained from Sir John Collie, 25, Porchester-terrace, W., and Dr. H. H. Mills, 21, St. Mary Abbots-terrace, Kensington.

CERTIFICATES SIGNED BY MEDICAL MEN NOT UPON PANELS.

The Non-Panel Committee of the British Medical Association has issued a circular calling attention to the mistaken idea held by many insured persons that they can only obtain payment of sickness benefit by producing the certificate of a medical man on the panel. That this is not the law was decided by the Court of Appeal in Heard *v.* Pickthorne, and any insured person who chooses to be attended by any medical man whom he may select is entitled to do so. He is not then entitled to obtain his medical man's fees or payment for his medicine out of the insurance funds, unless, of course, he is being attended by a non-panel medical practitioner after having obtained the permission of the Insurance Committee to make his own arrangements. He is, however, entitled to the other benefits, including sickness benefit, and to obtain the latter by producing the proper certificate signed by a medical practitioner, whether on the panel or not. It is to the interests of medical men not on the panel, and of their patients, that the above should be clearly recognised, not only by the insured, but by members of Insurance Committees, who are stated to be in some cases under the impression that persons permitted to make their own arrangements will not be able to obtain sickness benefit upon the certificates of the practitioners whom they may select.

A SUGGESTION AFFECTING PART OF THE SURPLUS FUNDS.

Mr. E. Nundy, a medical man on the panel and a barrister, makes a suggestion with regard to the surplus funds accumulated through the failure of insured persons to select their medical attendants, which may be summarised as follows. Mr. Nundy is of the opinion that a very large proportion of the London insured who did not select their medical attendant at the beginning of 1913 did so in the course of the year and that any medical man so selected ought to have been credited with a full year's fees in respect of each patient coming on to his list during the year in whatever quarter he may have been accepted as such. This view does not, of course, affect the case of patients who made no selection in the course of the year, but with regard to those to whom it does apply Mr. Nundy suggests the bringing of a friendly action with a view to establishing the legality of payment upon the principle which he advocates. It happens, however, that the mode of payment actually adopted was in accordance with the Administration of Medical Benefit Regulations, 1912, Schedule I., Part II. A, and Mr. Nundy asks that the London Insurance Committee in defending the action which he proposes should not rely upon this part of the schedule. He further urges that its significance was so misunderstood by medical men who outwardly assented to it when they went upon the panel, that their agreements in respect of it would not be binding upon them. We confess that we do not see how defendants to an action, friendly or otherwise, could start by failing to plead the regulation under which they acted when the legality of their proceedings is the point for consideration, and we are a little doubtful as to whether the schedule referred to is quite as obscure as Mr. Nundy declares. In comparison with some paragraphs in the new regulations it strikes us as lucid rather than otherwise. It appears, however, from a letter which we publish this week from Mr. Nundy that the chances of any such action being brought are rather remote.

THE COST OF DRUGS AT ABERDEEN.

At Aberdeen comment has been made upon the fact that the cost of drugs per head under the National Insurance Act has been 1*s.* 11*d.*, as against 1*s.* 10*d.* at Dundee and Inverness and lower figures elsewhere. The chemists on the panel approve these figures, and incidentally pay a compliment to the medical practitioners in their city by arguing that a low drug bill means the cheapening of prescriptions at the expense of the patients. The medical men, they contend, have sacrificed their own interests—i.e., their chance of receiving the "floating sixpence"—by prescribing the best medicines for their insured patients. The *Aberdeen Journal* refers to this as an explanation "reflecting the highest credit on city medical men."

NEW MEDICAL OFFICERS ON THE STAFF OF THE ENGLISH COMMISSION.

In connexion with the posts of medical officer on the staff of the National Health Insurance Commission (England), for which applications were recently invited, the Insurance Commissioners

announce that they have made the following appointments:—Edward William Adams, M.D. Lond., lecturer in materia medica, pharmacology, and therapeutics, and internal examiner in materia medica and pharmacology in the University of Sheffield; James Pearse, M.D., C.M. Edin., medical officer of health of Trowbridge urban district council; William Vernon Shaw, M.A., M.D. Oxon., medical officer of health to Malton and Norton (Yorks) rural district councils; and Barbara Martin Cunningham, M.D. Edin., D.P.H. Camb., resident medical officer at Clayton Vale Hospital, Manchester. Dr. Adams, Dr. Pearse, and Dr. Vernon Shaw are also engaged in private practice.

Medical News.

UNIVERSITY OF LONDON.—Advanced lectures in medicine have been arranged for the second term as follows: (1) A lecture on Apraxia: its Clinical and Localising Values, by Dr. S. A. Kinnier Wilson, at University College Hospital Medical School, at 4.30 P.M., on Thursday, Jan. 29th; (2) a lecture on the Action of Radium upon Animal Cells, by Dr. H. Beckton, at Middlesex Hospital, at 5 P.M., on Wednesday, March 4th; and (3) two lectures on the Pathological Excretion of Nitrogen by the Skin and the resulting Changes in the Urine, by Dr. H. L. Tidy, at the London Hospital, at 4.30 P.M., on Wednesdays, March 4th and 11th. The following lectures will be given during the third term: One lecture on Recent Observations on Ulcers of the Stomach, by Dr. Charles Bolton, at University College, and three lectures on Carbohydrate Metabolism in Health and in Diabetes, by Dr. H. MacLean, at St. Thomas's Hospital. The lectures are addressed to advanced students of the University and to others interested in the subjects dealt with, and admission will be free. A course of 12 lectures on the Protozoa Parasitic in Man will be given at the Lister Institute of Preventive Medicine, Chelsea, by Professor E. A. Minchin, professor of protozoology in the University, on Tuesdays and Fridays during the second term at 5 P.M., beginning on Tuesday, Jan. 27th. Each lecture will when possible be followed by exhibits of microscopic preparations illustrative of the subject of the lecture. Beginning on Jan. 15th a course of eight or nine University lectures on Anaphylaxis will be given free at King's College Department of Bacteriology, 62, Chandos-street, by Dr. L. Rajchman (Cracow), at 5 P.M.—A course of lectures and practical instruction on Physical Anthropology will be given in the department of anatomy of University College by Dr. D. E. Derry, lecturer in physical anthropology. The course will comprise one lecture and two meetings for practical work each week from Jan. 15th to March 20th. The following branches of the subject will be dealt with: Cranio-copy, craniometry, osteometry, anthropometry (on the living subject), estimation of stature, age, and sex from bones, comparison with higher mammals, especially the anthropoid apes, and race distribution and characteristics. The fee for the course is £2 2s.; to graduates and regular students of the University it is £1 1s. Applications should be made to the secretary, University College, London.

DONATIONS AND BEQUESTS.—The Cancer Hospital, Fulham, will benefit under the will of the late Mr. T. Cuvelje by a sum of nearly £70,000. To the Surgical Aid Society the testator left £5000, and a like sum to the Royal Hospital for Incurables, Putney.—The late Miss E. M. Easton has left by will £10,000 to the Durham College of Medicine.—By the first distribution of the residue of the estate of the late Mrs. M. B. Swaine, £4600, St. George's Hospital will receive £1000, the Hastings and East Sussex Hospital and the Guest Hospital, Dudley, £250 each; and the Corbett Hospital, Stourbridge, the Royal Victoria Hospital, Folkestone, the Middlesex Hospital, Hospital for Women, Soho-square, the London Hospital, the Metropolitan Free Hospital, the Charing Cross Hospital, the Evelina Hospital, the Queen's Hospital for Women, and the Lock Hospital, £200 each.—The late Mr. Arthur Paton Matthewson, of Dundee, has left £250 to the Dundee Royal Infirmary, £250 to the Royal Victoria Hospital, Dundee, and £100 to the Dundee Sick Poor Nursing Society.—By will the late Mr. Leonard Dingley, of Bournemouth, left £1250 to Queen's Hospital, Birmingham, for the endowment of a "Leonard Dingley" bed.

Dr. Gustave Monod, M.D. Paris, M.R.C.P. Lond. (of Vichy), has been commissioned by the French Ministre de l'Instruction Publique to report on the organisation of post-graduate study in Great Britain and in the United States, and has arrived in London with that object.

A MEDICAL MAGISTRATE.—Mr. John Wallis Gill, of St. Germans, has been placed on the commission of the peace for the county of Cornwall.

ROYAL INSTITUTE OF PUBLIC HEALTH.—A course of instruction in the Diagnosis and Treatment of Tuberculosis, for tuberculosis officers, school medical officers, and other medical practitioners, will begin on Friday, Jan. 16th. Lectures will be given by Dr. C. Addison, M.P., Dr. F. E. Fremantle, Dr. A. C. Inman, Mr. J. J. Perkins, Dr. T. N. Kelynack, Mr. Henry J. Gauvain, Dr. Cecil Wall, Dr. Clive Riviere, Dr. David J. Williamson, Dr. F. J. Wethered, and Dr. H. Owen West. Bacteriological demonstrations will be given in the laboratories of the Institute, and visits will be arranged to the tuberculosis dispensaries and sanatoriums. The lectures will be delivered at the Institute on Fridays at 5 P.M. All interested are invited to attend the first lecture on Friday, Jan. 16th, by Dr. Addison. An optional examination will be held at the close of the course, and certificates will be awarded to successful candidates. The fee for the course is 3 guineas. Further information may be obtained from the secretary, 37, Russell-square, London, W.C.

BOOKS, ETC., RECEIVED.

APPLETON, D., AND COMPANY, New York and London.

Manual of Obstetrics. By John Osborn Polak, M.Sc., M.D., Professor of Obstetrics and Gynecology in the Long Island College Hospital. Price 12s. 6d. net.

Minor Medicine. A Treatise on the Nature and Treatment of Common Ailments. By Walter Essex Wynter, M.D., B.S. Lond., F.R.C.P., F.R.C.S., Physician to the Middlesex Hospital and Lecturer on Medicine in the Medical School. Second edition. Revised and enlarged. Price 6s. net.

BAILLIÈRE, TINDALL, AND COX, London.

The Sensory and Motor Disorders of the Heart; their Nature and Treatment. By Alexander Morison, M.D., F.R.C.P., Senior Physician to the Great Northern Central Hospital. Price 7s. 6d. net.

Diseases of Children. A Manual for Students and Practitioners. By John McCaw, M.D., R.U.I., L.R.C.P. Edin., &c., Senior Physician, Belfast Hospital for Sick Children. Price 10s. 6d. net

BURROUGHS WELLCOME AND CO., London, New York, Montreal, Sydney, Cape Town, Milan, Shanghai, Buenos Aires, and Bombay.

The 'Wellcome' Photographic Exposure Record and Diary. 1914. Northern Hemisphere and Tropics. Price 1s.

CHURCHILL, J. AND A., London.

Materia Medica, Pharmacy, Pharmacology, and Therapeutics. By W. Hale White, M.D. Lond., M.D. Dub. (Hon.), Senior Physician to and Lecturer on Medicine at Guy's Hospital. Thirteenth edition. Price 6s. 6d. net.

The Medical Directory, 1914. Seventieth Annual Issue. Price 15s. net.

Year-Book of Pharmacy and Transactions of the British Pharmaceutical Conference, 1913. Editor of the Abstracts, J. O. Braithwaite. Editor of the Transactions, Reginald R. Bennett, B.Sc., F.I.C., Compiler of New Remedies Section, F. W. Gamble. Price not stated.

"GARDEN LIFE" OFFICE, Hatton House, Great Queen's-street, London, W.C.

The Amateur Gardener's Diary and Dictionary. 1914. Price, stiff paper cover, 1s.; cloth cover, 1s. 6d.

GRIFFIN, CHARLES, AND CO., LIMITED, Exeter-street, Strand, London, W.C.

A Handbook of Hygiene. By A. M. Davies, M.R.C.S., L.S.A., D.P.H. Camb., Lieutenant-Colonel, R.A.M.C. (Retired); late Professor of Hygiene, Royal Army Medical College. Fourth edition. Revised and enlarged by A. M. Davies and C. H. Melville, M.B., C.M., D.P.H. (R.C.P. Lond.); Brevet-Colonel, R.A.M.C.; late Professor of Hygiene, Royal Army Medical College. Price 10s. 6d. net.

UNIVERSITY PRESS, Cambridge. CAMBRIDGE UNIVERSITY PRESS, (C. F. CLAY, Manager), Fetter-lane, London, E.C.

The Cambridge Pocket Diary. 1913-1914. Prices, 1s. net, 2s. net, and 2s. 6d. net.

The Cambridge Diary for the Academical year 1913-1914. Price 1s. net.

WILEY, JOHN, AND SONS, INC., New York. CHAPMAN AND HALL, Limited, London.

Handbook on Sanitation. A Manual of Theoretical and Practical Sanitation. By George M. Price, M.D. Third edition, rewritten and reset. Total issue 6000. Price 6s. 6d. net.

Quantitative Analysis by Electrolysis. By Alexander Classen, with the Coöperation of H. Cloeren. Translated from the thoroughly revised Fifth German Edition, by William T. Hall, Assistant Professor, Massachusetts Institute of Technology. Price 10s. 6d. net.

Outlines of Theoretical Chemistry. By Frederick H. Getman, Ph.D. (Johns Hopkins), Associate Professor of Chemistry in Bryn Mawr College. First edition. First Thousand. Price 15s. net.

WORLD BOOK COMPANY, Yonkers-on-Hudson, New York.

First Book of Health. A Text-book of Personal Hygiene for Pupils in the Lower Grades. By Carl Hartman, B.A., M.A., Instructor in Zoology, University of Texas; and Lewis Bradley Bibb, B.A., M.D., Attending Physician, Austin Sanitarium. Price 35 cents.

The Human Body and its Enemies. A Text-book of Physiology, Hygiene, and Sanitation. By Carl Hartman, B.A., M.A., and Lewis Bradley Bibb, B.A., M.D. Price 65 cents.

WRIGHT, JOHN, AND SONS, LIMITED, Bristol. SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., LIMITED, London. MACMILLAN COMPANY OF CANADA, LIMITED, Toronto.

The Biology of the Blood Cells. With a Glossary of Hæmatological Terms. For the Use of Practitioners of Medicine. By O. C. Gruner, M.D. Lond. Price 21s. net.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BOWER, ERNEST DYKES, M.D. Durh., F.R.C.S. Edin., M.R.C.S., L.S.A., has been appointed Honorary Consulting Surgeon to the Gloucestershire Royal Infirmary and Eye Institution.

BROADBENT, Sir JOHN, Bart., M.D. Oxon., has been appointed Full Physician on the staff of St. Mary's Hospital, Paddington.

FAYLE, B. J. L., L.R.C.P., M.R.C.S., has been appointed Assistant House Physician at the Bristol General Hospital.

GRANT, JOHN C. D., M.B., Ch.B. Edin., has been appointed House Surgeon to the Ear, Nose, and Throat Department at the Bristol Royal Infirmary.

JOHNSON, R. B., L.R.C.P., M.R.C.S., has been appointed Casualty Officer at the Bristol General Hospital.

JONES, R. LLEWELLYN, L.R.C.P., M.R.C.S., has been appointed House Surgeon at the Bristol General Hospital.

KETTLEWELL, N. H., L.D.S. Eng., has been appointed Dental House Surgeon at the Bristol Royal Infirmary.

LANGMEAD, F., M.D. Lond., has been appointed Physician-in-Charge of Out-patients at St. Mary's Hospital, Paddington.

ORR-EWING, HUGH JAMES, M.B., B.S. Lond., L.R.C.P., M.R.C.S., has been appointed House Physician at the Bristol Royal Infirmary.

PARROT, H. W., M.B., B.S. Lond., has been appointed House Physician at the Bristol General Hospital.

TAYLOR, H. L., M.B., Ch.B. (Honours), has been appointed Resident Medical Officer at the Sunderland Union Hospital.

WADE, E. W., M.B., B.S. Lond., has been appointed House Surgeon at the Bristol Royal Infirmary.

WALKER, H. B., M.B., B.S. Lond., has been appointed House Surgeon at the Bristol Royal Infirmary.

WHALE, HAROLD L., M.D., B.C. Cantab., F.R.C.S. Eng., has been appointed Surgeon to the Throat, Nose, and Ear Department of the Hampstead and North-West London Hospital.

WINSTANLEY, R. W., L.R.C.P. Edin., M.R.C.S., L.S.A., has been reappointed Medical Officer for the Hindhead and Shottermill Districts.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ALNWICK INFIRMARY.—House Surgeon, unmarried. Salary £140 per annum, with board and apartments.

ASHTON-UNDER-LYNE DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL.—Assistant House Surgeon. Salary £90 per annum, with board, residence, and laundry.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £100 per annum, with board and laundry.

BIRMINGHAM CITY FEVER HOSPITAL, Little Bromwich.—Second Assistant Medical Officer. Salary £160 per annum, with board and residence.

BIRMINGHAM, CITY OF.—Female Assistant Medical Officer of Health for Infant Consultation Work, &c. Salary £250 per annum.

BRADFORD ROYAL INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with board, residence, and washing.

BRENTWOOD ASYLUM, Brentwood, Essex.—Assistant Medical Officer. Salary £200 per annum, with board, &c.

BRISTOL, COSSHAM MEMORIAL HOSPITAL, Kingswood.—House Surgeon. Salary £100 per annum, with board, lodging, and washing.

BUXTON, DERBYSHIRE, DEVONSHIRE HOSPITAL.—Assistant House Physician for six months. Salary £100 per annum, with apartments, board, and laundry.

CARDIFF, KING EDWARD VII.'s HOSPITAL.—Resident Surgical Officer. Salary £160 per annum, with board, laundry, and apartments.

CARMARTHEN, JOINT COUNTIES ASYLUM.—Second Assistant Medical Officer. Salary £180 per annum, with board, lodging, washing, &c.

CHARING CROSS HOSPITAL.—Medical Registrar.

CHELTENHAM BOROUGH EDUCATION COMMITTEE.—Assistant Medical Officer of Health and Assistant School Medical Officer. Salary £250 per annum.

CHESTER, COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £200 per annum, with board, lodging, and washing.

CLINICAL RESEARCH ASSOCIATION, LIMITED, Watergate House, York Buildings, Adelphi, W.C.—Assistant Director of the Laboratories. Salary £250 per annum.

COLCHESTER, ESSEX COUNTY HOSPITAL.—House Physician. Also House Surgeon. Salary £100 per annum in each case, with board, washing, and residence.

DARENTH INDUSTRIAL COLONY, Dartford, Kent—Third Assistant Medical Officer, unmarried. Salary £180 per annum, with board, lodging, and washing.

DARLINGTON, BOROUGH OF.—Assistant Medical Officer of Health and Assistant School Medical Officer. Salary £300 per annum.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—Assistant House Surgeon for six months.

DEWSBURY AND DISTRICT GENERAL INFIRMARY.—House Surgeon. Salary £120 per annum, with board, residence, and washing.

DOUGLAS, ISLE OF MAN, NOBLE'S HOSPITAL.—Resident House Surgeon, unmarried. Salary £100 per annum, with board and washing.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Assistant House Surgeon. Salary £65 per annum, with board and washing.

DUNDEE ROYAL INFIRMARY.—Obstetric Assistant. Salary at rate of £40 per annum, with board, lodging, and washing.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—House Physician and Assistant Casualty Officer for six months. Salary at rate of £75 per annum, with board, residence, laundry, &c.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, S.E.—House Surgeon. Salary at rate of £75 per annum, with board, residence, and washing.

FRENCH HOSPITAL AND DISPENSARY, 172, Shaftesbury-avenue, W.C.—Second Resident Medical Officer, unmarried. Salary £60 per annum, with board and laundry.

GLASGOW DISTRICT MENTAL HOSPITAL, Gartloch.—Junior Medical Officer. Salary £200 per annum, with board, lodging, and laundry.

GLOUCESTER, GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION.—Surgeon.

GREAT YARMOUTH HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board, lodging, and washing.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon. Salary £100 per annum, with board, residence, and laundry.

HELLINGLY, EAST SUSSEX COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £200 per annum, with board, apartments, washing, and attendance.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician.

HUNTINGDONSHIRE COUNTY COUNCIL.—Female Assistant County Medical Officer and Assistant School Medical Officer. Salary £250 per annum.

KING'S COLLEGE HOSPITAL, Denmark Hill, S.E.—Assistant Physician for Diseases of Children. Also Assistant Surgeon for Diseases of the Throat.

LEEDS GENERAL INFIRMARY.—Resident Aural Officer. Salary £100 per annum, with board, residence, and laundry.

LIVERPOOL CITY INFECTIOUS DISEASES HOSPITAL AND SANATORIUM FOR TUBERCULOSIS.—Assistant Resident Medical Officer, unmarried. Salary £140 per annum, with board, washing, and lodging.

LIVERPOOL EDUCATION COMMITTEE.—Two School Medical Officers. Salary at rate of £250 per annum.

LIVERPOOL PORT SANITARY AUTHORITY.—Assistant Medical Officer. Salary £350 per annum.

LIVERPOOL STANLEY HOSPITAL.—Junior House Surgeon. Salary £75 per annum, with board, residence, and laundry.

LONDON TEMPERANCE HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of 100 guineas per annum.

MACCLESFIELD GENERAL INFIRMARY.—House Surgeon. Salary £125 per annum, with board and residence.

MAIDSTONE, KENT COUNTY ASYLUM.—Fourth Assistant Medical Officer, unmarried. Salary £200 per annum, with quarters, attendance, washing, &c.

METROPOLITAN ASYLUMS BOARD INFECTIOUS HOSPITALS SERVICE.—Junior Assistant Medical Officer, unmarried. Salary £180 per annum, with board, lodging, and washing.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—House Surgeon and Assistant House Surgeon for six months. Salary at rate of £60 and £40 per annum respectively, with board and washing.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.—Honorary Radiographer, Surgeon Laryngologist, and Assistant Physician. Also House Physician at Northwood. Salary £75 per annum, with board, residence, and washing.

NATIONAL DENTAL HOSPITAL, Great Portland-street, W.—Anæsthetist.

NOTTINGHAM CHILDREN'S HOSPITAL.—Female House Surgeon for six months. Salary at rate of £100 per annum, with apartments, board, and washing.

NORFOLK EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £350 per annum. Also School Dentist. Salary £250 per annum.

NOTTINGHAM GENERAL DISPENSARY.—Assistant Resident Surgeon, unmarried. Salary £180 per annum, with apartments, &c.

NOTTS COUNTY COUNCIL, RANSOM SANATORIUM, Sherwood Forest, Mansfield.—Resident Medical Officer. Salary £100 per annum, with board, residence, and laundry.

PERTH DISTRICT ASYLUM.—Assistant Physician. Salary £150 per annum and all found

PLYMOUTH INCORPORATION OF GUARDIANS WORKHOUSE AND INFIRMARY.—Resident Assistant Medical Officer. Salary £180 per annum, with apartments, rations, washing, and attendance.

PRESTON, COUNTY ASYLUM, Whittingham.—Assistant Medical Officer, unmarried. Salary £250, rising to £300, per annum, with board, apartments, and washing.

READING, ROYAL BERKSHIRE HOSPITAL.—Honorary Physician.

ROCHDALE INFIRMARY.—Second House Surgeon, unmarried. Salary £100 per annum, with board, residence, and laundry.

ROCHESTER, ST. BARTHOLOMEW'S HOSPITAL.—Resident House Physician for six months. Salary at rate of £110 per annum, with board, residence, and laundry.

ROYAL EYE HOSPITAL, Southwark, S.E.—Senior and Junior House Surgeons for six months. Salaries £70 and £50 per annum respectively, with board and residence. Also Clinical Assistants.

ROYAL EAR HOSPITAL, 42 and 43, Dean-street, London, W.—Clinical Assistants.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—Honorary Laryngologist.

ST. THOMAS'S HOSPITAL.—Ophthalmic House Surgeon.

SCARBOROUGH HOSPITAL AND DISPENSARY.—Senior House Surgeon. Salary £100 per annum, with board, residence, &c.

SHEFFIELD, CHILDREN'S HOSPITAL, Western Bank.—House Surgeon. Salary £100 per annum, with board and residence.

SHEFFIELD, JESSOP HOSPITAL FOR WOMEN.—Senior and Assistant House Surgeons, unmarried. Salaries £100 and £80 per annum respectively, with board, residence, and laundry.

SUNDERLAND, COUNTY BOROUGH OF.—Tuberculosis Medical Officer. Salary £500 per annum.

TAUNTON, SOMERSET AND BATH ASYLUM, Cotford.—Assistant Medical Officer, unmarried. Salary £200 per annum, with apartments, board, washing, attendance, &c.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician and House Surgeon for six months. Salary £40, with board, lodging, and laundry.

WARWICK COUNTY ASYLUM, Hatton, near Warwick.—Second Assistant Medical Officer, unmarried. Salary £200 per annum, with board, lodging, and laundry.

WEST BROMWICH AND DISTRICT HOSPITAL.—Assistant Resident House Surgeon and Anæsthetist, unmarried. Salary £75 per annum, with board, residence, and washing.

WEST HAM AND EASTERN GENERAL HOSPITAL.—Junior House Surgeon. Salary at rate of £75 per annum.

WEST HAM UNION SICK HOME, Forest-lane, Forest Gate.—Second Assistant Resident Medical Officer. Salary £140 per annum.

WESTMINSTER HOSPITAL.—Resident Medical Officer, unmarried. Salary £100 per annum, with board and residence. Also Medical Officer in Charge of Department of Bacterio-Therapeutics. Salary £100 per annum. Also Resident Obstetric Assistant for six months. Board provided.

WINCHESTER, ROYAL HAMPSHIRE COUNTY HOSPITAL.—House Physician. Salary £80 per annum.

WOOLWICH INFIRMARY, Plumstead.—Assistant Resident Medical Officer, unmarried. Salary £150 per annum, with apartments, rations, and washing.

YORK COUNTY HOSPITAL.—House Physician for six months. Salary at rate of £100 per annum, with board, residence, &c.

YORK DISPENSARY.—Resident Medical Officer, unmarried. Salary £140 per annum, with board, lodging, and attendance.

*** The summary of vacant appointments, published weekly in this column, is, equally with other articles, the literary copyright of the Proprietors of THE LANCET.

Births, Marriages, and Deaths.

BIRTHS.

BIRD.—On Jan. 6th, at Old Croft, Godalming, Surrey, the wife of Gerald F. Bird, M.B., of a son.

FAWKES.—On Jan. 3rd, at Church Hill, Midhurst, Sussex, the wife of Marmaduke Fawkes, M.B., B.S. Lond., M.R.C.S., L.R.C.P., of a daughter.

LEITCH.—On Jan. 5th, at Overstrand Mansions, Battersea Park, to Dr. and Mrs. Archibald Leitch, a daughter (Isobel Felicity).

O'MEARA.—On Dec. 31st, 1913, at Biscot-road, Luton, the wife of Hubert O'Meara, M.B., B.S. Lond., of a son.

POOLER.—On Jan. 4th, at Strathray, Leigh-road, Westcliff-on-Sea, to Dr. and Mrs. J. Read Pooler, a daughter.

MARRIAGES.

CANNEY—NEWTON.—On Dec. 30th, 1913, at the Church of St. Mary the Great, Cambridge, James Robertson Campbell Canney, M.A., M.D., B.C. Cantab., to Violet, elder daughter of Arthur William Newton, H.M. Inspector of Schools, of Bowman's Lodge, Cambridge.

HOOKER—LLOYD.—On Dec. 27th, 1913, at the British Episcopal Church, Foochow, China, Alfred Wyatt Hooker, M.B., B.S. Lond., to Maud Mary, only daughter of the Rev. and Mrs. Llewellyn Lloyd, C.M.S., Foochow, China.

DEATHS.

HALL.—On New Year's Day, at "Tresco," North Finchley, N., James Hall (father of Dr. J. Field Hall), in his 89th year.

HALL.—On Jan. 3rd, at Bankside, Mayfield, Sussex, very suddenly, Henry John Hall, M.R.C.S. Eng., L.R.C.P. Lond.

HEWLETT.—On Jan. 7th, at 12, Colinette-road, Putney, S.W., after a long illness, Louise, the wife of R. Tanner Hewlett, M.D., F.R.C.P.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

MEDICINE AND MISSIONS.

IN the current number of *The East and the West* there is a series of articles on missions in their various phases all over the world. The whole review is interesting, and the tone generally so liberal and tolerant that even the unfriendly critic of missions would find little to cavil at. Mr. Henry Rundle writes on Medicine and Missions, and gives a comprehensive review of the work of British medical missions from the year 1703, when General Codrington left a portion of his West Indian estates to the Society for the Propagation of the Gospel, making provision that "a convenient number of professors and scholars be maintained there to study and practise physic and chirurgery as well as divinity." That was the beginning of a great and beneficent enterprise, and to-day the principle of this wise bequest has so far gained acceptance that medical work is regarded as an indispensable part of the regular business of every missionary society. The story of this development is told in something more than outline, and space is found for a particular appreciation of the work of many pioneers in the field of medical missionary effort. Especially noteworthy are the references to the really wonderful achievements of Dr. A. M. Pennell, of Bannu, and Dr. Wilfred T. Grenfell, the devoted and heroic friend of the people of Labrador. Although the writer's whole-hearted sympathy with Christian missions is never concealed, he treats his subject frankly from the point of view of the doctor, and therein, to our thinking, lie the chief value and interest of this contribution. To urge the importance of medical science as an adjunct to missionary enterprise is perhaps superfluous at a time when every missionary society is eagerly anxious to develop that side of its work, but Mr. Rundle does more than this when he shows that medical science has found, and may still find, its highest opportunities of science in coöperation with the evangelistic efforts of Christian missions. Thus, perhaps unconsciously, the appeal of this paper is to the medical quite as much as to the missionary student.

KIKUYU.

THIS name, scarcely known to many a short while ago, has now sprung into striking prominence amongst Anglican Churchmen, Nonconformists, Roman Catholics, and others. The name is said to be derived from Kuyu, a fig. Fig trees are very abundant in the country. The Akikuyu are the result of an inter-mixture of the Masai and the Bantu. Their numbers are estimated at a million. Kikuyu is the twenty-third Uganda railway station, 342 miles from the coast, at an altitude of 6700 feet. The country is a fertile wooded strip extending from the hog-backed mountain called Ngongo Bayas northwards to Kenia. The people are intelligent and industrious, and cultivate their plantations with great care. They are essentially agriculturists and cultivators, and lead a semi-settled life—that is to say, they burn a clearing in the forest, build a village, and cultivate for a few years. As soon as the soil shows any sign of exhaustion they move on, burn another clearing, and repeat the same process. They make good workmen under European or Indian surveillance, and do the greater part of the manual labour in the workshops of the Uganda railway. It was in 1849 that Dr. Ludwig Krapf, a missionary, who had been expelled from Abyssinia, discovered Mount Kenia. He worked with the Rev. John Rebmann, who also made discoveries. Further particulars will be found in "Drumkey's Year Book for East Africa." The name of a medicine man there is Mun-du-Mu-gu, which, according to Mr. A. W. McGregor, of the Church Missionary Society, means a "clever man." We discussed this matter and these interesting people in a long review in THE LANCET of June 11th, 1910, p. 1621, of a book entitled "With a Prehistoric People: the Akikúyu of British East Africa," and our readers may wish to turn again to that volume in view of the topical importance of Kikuyu, which seems to have become a pivot of the world.

BABY No. 30.

Herr Schmidt, chief postmaster of Briesen, Western Prussia, and his wife may be looked upon as pillars of the State—that is, of their own state—and the holy state of matrimony. Their thirtieth child has just been born, and they have been honoured by the publication of their portraits in the *Daily Express*. We hope that all the 29 other children are alive, for the family which produces the greatest number of babies comes second to the family which succeeds in rearing the greatest number properly.

CONSUMPTIVES AND THE POST OFFICE.

WE have received a letter from Toronto, dated Dec. 17th, 1913, in an envelope which bears a red two cent postage stamp with King George's head obliterated by the usual black parallel lines, but attached thereto is a black frame about one square inch containing the words: "Help the Muskoka Free Hospital for Consumptives." The Canadian Post Office is obviously lending a hand, but we trust it does not mean that the Post Office officials require an extraordinary amount of assistance from the sanatorium. In THE LANCET of Oct. 1st, 1910, p. 1041, will be found an account of the Muskoka Sanatoriums for Tuberculosis.

THE CARE OF THE BABY AND THE SICK.

WE have had occasion previously to refer to some of the useful domestic series of pamphlets issued at the price of 1*d.* each (or post free for 1½*d.*) by the Women's Industrial Council, 7, John-street, Adelphi, W.C. Two new ones are *How to Take Care of Baby*, by Selina F. Fox, M.D., B.S., and *How to Take Care of the Sick at Home*, by W. and S. Rintoul. Of the first we can cordially endorse the words of Dr. Eric Pritchard, who writes the preface, that its pages seem to contain exactly the right amount of information, neither too much nor too little. Of the second, it may be said also that it gives just that kind of information that every householder ought to possess in regard to accidents and the care of the sick; for, as Sir Victor Horsley, who contributes a preface, says, "the personal combat cannot be warded off even by the possession of means to pay for skilled aid."——Mrs. Frank Stephens's penny booklet for mothers is in its 321st thousand. It is called *How to Rear a Baby*, and is published by Messrs. Horace Marshall and Son, London. It is full of good common sense, and at the same time also sound teaching, even if a little extreme in some points. The danger of abrading the delicate protective epithelium of the infant's mouth by the indiscriminate practice of so-called "mouth cleansing" has been several times referred to in our columns, and we certainly cannot approve of its recommendation in general terms (p. 27) without a single cautionary word.

A NURSING JOURNAL FOR SOUTH AFRICA.

THE first number of the *South African Nursing Record*, dated October, seems well calculated to assist in fulfilling the task to which it has devoted itself—viz., the organisation of the nursing profession in South Africa, the uniting of it in the bonds of common interest, and the arousing of it to a realisation of its importance in the State. It contains varied material of interest to nurses, including articles on Operating Theatre Methods and their Evolution, by Mr. D'Arcy Power, F.R.C.S., and on Infant Feeding, by Dr. J. Bruce-Bays, with nursing news, both local and general. It is to be published monthly at East London, price 10*s.* 6*d.* per annum, or 1*s.* a copy.

THE PARIS, LYONS, AND MEDITERRANEAN RAILWAY.

THE Paris, Lyons, and Mediterranean Railway Company have issued the second and third sections of the atlas of their railway system. Both are well illustrated, and contain excellent maps of the districts through which the system runs in the Riviera, and in Savoy and Dauphiny. The latter section has coloured plates representing the army of Napoleon crossing the Alps in 1800 and the Alpine Rifles during the manœuvres of 1913. The other section contains coloured plates representing the battle of flowers in the Bay of Villefranche and the carnival at Nice. Both sections can be obtained free from the offices of the company, 179, Piccadilly, London, W.

A USEFUL diary, bound in red cloth and giving a clear page of 8 by 5 inches to a day, together with an alphabetical index at the end, will be sent free of cost to our readers on application to "Lactéol du Dr. Boucard," 9, Gamage Buildings, Holborn, London, E.C.

ERRATUM.—The Notes from Canada in THE LANCET of Nov. 29th, 1913, contained a mistake. Our correspondent stated that Dr. John Stewart had recently been appointed professor of surgery in the Halifax Medical College. It has been pointed out to us that the Halifax Medical College has been taken over by the University of Dalhousie, and the professor in surgery is Dr. E. V. Hogan.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

A DIARY OF CONGRESSES.

THE following Congresses, Conferences, and Exhibitions are announced. In 1914:—

April 14th–18th (New York).—Fourth Congress of the International Surgical Society.

April 20th–23rd (Wiesbaden).—Thirty-first German Congress for Internal Medicine.

May 1st–Nov. 1st (Lyons).—International Town Life Exhibition.

July 6th–11th (Blackpool).—Twenty-ninth Congress of the Royal Sanitary Institute.

„ 8th–13th (Edinburgh).—Congress of the Royal Institute of Public Health.

Aug. 3rd–8th (London).—Sixth International Dental Congress.

„ 10th–15th (St. Petersburg).—Twelfth International Congress of Ophthalmology.

Sept. 7th–12th (Berne).—International Congress for Neurology, Psychiatry, and Psychology.

September (Vienna).—Third International Congress for Diseases of Occupation.

(London).—Anglo-American Exhibition.

(Aberdeen).—Eighty-second Annual Meeting of the British Medical Association.

(Auckland, N.Z.).—Australasian Medical Congress.

(St. Petersburg).—Third Mendeléeff Congress of Pure and Applied Chemistry and Physics.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY.

SECTION OF SURGERY (Hon. Secretaries—J. Murray, Raymond Johnson): at 5.30 P.M.

Discussion:

On Nephropexy and its Results (opened by Mr. G. Percival Mills, and continued by Mr. W. Billington, Mr. Leonard Gamgee, Mr. J. W. Thomson Walker, Mr. J. Sherren, and others).

THURSDAY.

SECTION OF DERMATOLOGY (Hon. Secretaries—J. M. H. MacLeod, S. E. Dore): at 5 P.M.

Cases:

Dr. J. J. Pringle: Xerodermia Pigmentosa under Treatment by Massive Doses of Radium.
Dr. H. MacCormac: Case for Diagnosis.
Dr. J. H. Sequeira: Lichenoid Eruption (shown at last meeting).
Dr. Knowsley Sibley: Tuberculide.
Dr. G. Pernet: Acne Varioliformis in a Woman.
Dr. A. M. H. Gray: (1) Tuberculide; (2) Disseminated Lupus Erythematosus.
Dr. A. Whitfield: Urticaria Pigmentosa.
Dr. Sequeira: Pityriasis Rubra Pilaris.
And other Cases.

FRIDAY.

SECTION OF OTOLOGY (Hon. Secretaries—G. J. Jenkins, G. N. Bigg): at 5 P.M.

Communications and Cases:

By Dr. William Milligan, Dr. J. C. Potter, Mr. G. J. Jenkins, and others.

SECTION OF ELECTRO-THERAPEUTICS (Hon. Secretaries—Cecil R. C. Lyster, S. Gilbert Scott), at St. Thomas's Hospital, S.E.: at 8.30 P.M.

Inspection of Electrical Department and Demonstrations.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY.—8.30 P.M., Discussion on the Pathology of Syphilis (opened by Dr. W. d'Este Emery). Followed by Mr. P. Fildes, Mr. J. E. R. McDonagh, Dr. J. McIntosh, and others.

PLYMOUTH MEDICAL SOCIETY. Athenæum Chambers, Athenæum-lane, Plymouth.

WEDNESDAY.—8.30 P.M., Discussion on the Sterilisation of Tuberculous Sputum (opened by Dr. A. W. F. Sayres).

HUNTERIAN SOCIETY, St. Bartholomew's Hospital, E.C.

WEDNESDAY.—9 P.M., Lecture:—Mr. J. Cantlie: Recent Advances in Tropical Medicine (with lantern slide demonstration).

SOUTH-WEST LONDON MEDICAL SOCIETY, Bolingbroke Hospital, Wandsworth Common, S.W.

WEDNESDAY.—9 P.M., Dr. T. J. Horder: The Causation and Treatment of the Rheumatoid Type of Multiple Arthritis.

ILLUMINATING ENGINEERING SOCIETY, House of the Royal Society of Arts, 18, John-street, Adelphi, W.C.

THURSDAY.—8 P.M., Resumed Discussion of the paper read by Mr. P. J. Waldram at the last meeting on Some Problems in Daylight Illumination, with Special Reference to School Planning.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.

FRIDAY.—8 P.M., Special Clinical Evening.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY.—8.30 P.M., Prof. R. Newstead: The Bionomics and Structural Characters of Glossina (illustrated by lantern slides and an extensive collection of museum specimens illustrative of all the known species of the genus).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. G. Little: Clinique (Skin). 5.15 P.M., Lecture:—Mr. A. C. Woodward: The Treatment of Fractures by Direct Extension of the Fragments.

TUESDAY.—4 P.M., Dr. F. G. Crookshank: Clinique (Medical). 5.15 P.M., Lecture:—Mr. R. M. Little: Boots and Shoes from Surgical and Historical Points of View.

WEDNESDAY.—4 P.M., Dr. E. M. Corner: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. H. L. Jones: Diathermy.

THURSDAY.—4 P.M., Mr. J. Berry: Clinique (Surgical). 5.15 P.M., Lecture:—Mr. V. Z. Cope: The Pre-peritonitic Stage of Appendicitis.

FRIDAY.—4 P.M., Mr. H. Barwell: Clinique (Ear, Nose, and Throat).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 10.30 A.M., Medical Registrar: Demonstration of Cases in Wards. 12 noon, Dr. Bernstein: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Armour: Operations. Dr. Pritchard: Bacterial Therapy Department. 2.30 P.M., Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Dr. Beddard: Acute Pulmonary Infections.

TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Mr. T. Gray: Demonstration of Fractures, &c. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin. 5 P.M., Lecture:—Dr. Beddard: Acute Pulmonary Infections.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 11 A.M., Mr. Souttar: Demonstration of Minor Operations. 12 noon, Lecture:—Mr. Souttar: Abdominal Diagnosis. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women. 5 P.M., Lecture:—Dr. Beddard: Acute Pulmonary Infections.

THURSDAY.—9 A.M., Dr Bernstein: Bacterial Therapy Department. 10 A.M., Dr. Simson: Gynæcological Demonstration. 12.15 P.M., Lecture:—Dr. G. Stewart: Neurological Cases. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Armour: Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture.

FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 12.15 P.M., Lecture:—Dr. Bernstein: Clinical Pathology. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin. 5 P.M., Lecture:—Dr. Beddard: Acute Pulmonary Infections.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Diseases of the Eye. 12 noon, Lecture:—Mr. Souttar: Surgical Anatomy of the Abdomen. 2 P.M., Medical and Surgical Clinics. Mr. Pardoe: Operations.

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—Out-patient Demonstrations:—10 A.M. Dr. Singer: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.—2.15 P.M., Mr. W. Turner: Surgery. 3 P.M., Mr. W. Turner: Operations. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4.15 P.M., Mr. R. Lake: Ear and Throat.

TUESDAY.—Out-patient Demonstrations:—10 A.M., Dr. G. Holmes: Medical. Mr. Cole: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Mr. R. Carling: Surgery. 3.15 P.M., Dr. G. Rankin: Medicine.

WEDNESDAY.—Out-patient Demonstrations: 10 A.M., Dr. F. Langmead: Medical. Mr. Cecil Rowntree: Surgical. 11 A.M., Mr. R. B. Bickerton: Eye.—2 P.M., Mr. L. V. Cargill or Mr. Choyce: Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.15 P.M., Mr. Cargill: Eye Clinique. 4.30 P.M., Mr. C. C. Choyce: Surgery.

THURSDAY.—Out-patient Demonstrations:—10 A.M., Dr. Singer: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.—2 P.M., Mr. R. Carling or Mr. W. Turner: Operations. Dr. A. Davies: Pathological Demonstration. 3.15 P.M., Dr. R. Wells: Medicine. 4.30 P.M., Special Lecture:—Dr. C. O. Hawthorne: The Interpretation of Sphygmographic and Sphygmomanometric Records.

FRIDAY.—Out-patient Demonstrations;—10 A.M., Dr. G. Holmes: Medical. Mr. Cole: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Sir John Rose Bradford; Medicine. 3.15 P.M., Mr. L. McGavin: Surgery.

SATURDAY.—Out-patient Demonstrations: 10 A.M., Dr. F. Langmead: Medical. Mr. Cecil Rowntree: Surgical. 11 A.M., Mr. R. B. Bickerton: Eye.—10 A.M., Col. Barry: Radiography.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patient (Mr. R. Gillespie). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. H. D. Gillies). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. Howell Evans); Gynæcological (Dr. A. E. Giles). X Rays and Electrical Methods. 3 P.M., X Ray Examination of the Chest (Dr. Metcalfe). 3.30 P.M., Medical In-patient (Dr. A. J. Whiting). 4.15 P.M., Varieties of Conjunctivitis, their Diagnosis and Treatment (M. Dorrell).

WEDNESDAY.—Clinics:—2 P.M., Throat Operations (Mr. Gillies). 2.30 P.M., Children's Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks). 3 P.M., Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan). 5.30 P.M., Eye Operations (Mr. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson); X Rays and Electrical Methods. 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. R. Gillespie); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. G. P. Chappel); Clinical Pathology and Pathological Demonstration.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), Clinical Theatre, London Hospital, Mile End-road, E.

Course of Lectures on the Neuroses and Psychoses of Children:—

MONDAY.—4.15 P.M., Dr. F. Warner: Study of Modes of Brain Action.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

QUEEN'S HOSPITAL FOR CHILDREN, Board Room of the Hospital, Hackney-road, N.E.

WEDNESDAY.—4 P.M., Post-Graduate Lecture: Mr. S. Fenwick: Spinal Caries.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—Mr. Hampson: X Ray Epilation for Ringworm.
THURSDAY.—6 P.M., Dr. M. Dockrell: Baldness—I., Bacillary. II., Parasitic; III., Atrophic; IV., Inflammatory; V., Systemic Intoxication.

ROYAL INSTITUTE OF PUBLIC HEALTH, Lecture Room of the Institute, 37, Russell-square, W.C.

Course of Instruction for Tuberculosis Officers, School Medical Officers, Medical Practitioners, &c.:—

FRIDAY.—5 P.M., The Diagnosis and Treatment of Tuberculosis, &c.—Lecture I:—Dr. C. Addison, M.P.: The Problem in Relation to Insurance and Public Health.

MANCHESTER HOSPITALS POST-GRADUATE CLINIC.

MONDAY.—MANCHESTER CHILDREN'S HOSPITAL, Gartside-street.—4.30 P.M., Dr. C. C. Heywood: Abdominal Tuberculosis in Children.

TUESDAY.—SALFORD ROYAL HOSPITAL.—4.30 P.M., Dr. Clifford: Prolapse of Uterus and Vaginal Walls.

WEDNESDAY.—ROYAL INFIRMARY.—4.30 P.M., Mr. C. Roberts: The Diagnosis of Swellings in the Cervical Region.

THURSDAY.—ANCOATS HOSPITAL.—4.30 P.M., Mr. W. R. Douglas: Chronic Lesions of the Mouth.

FRIDAY.—ROYAL EYE HOSPITAL.—4.30 P.M., Dr. H. H. McNabb: Subjective Tests for Visual Acuity.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICAL DEMONSTRATIONS.

TUESDAY.—SHEFFIELD ROYAL HOSPITAL.—3 P.M., Mr. Mould: Borderland Mental Cases.

FRIDAY.—SHEFFIELD ROYAL HOSPITAL.—3 P.M., Dr. Nalsh: The Electro-Cardiograph.

For further particulars of the above Lectures, &c., see Advertisement Pages.

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THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. II. of 1913 were given in THE LANCET of Dec. 27th, 1913.

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Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Jan. 1	30·55	N.	...	40	40	31	—	33	Overcast
,, 2	30·48	W.	...	56	47	33	37	38	Overcast
,, 3	30·45	N.W.	...	51	44	38	42	43	Cloudy
,, 4	30·23	S.W.	...	55	50	38	43	45	Cloudy
,, 5	29·73	W.	0·04	47	47	44	46	47	Raining
,, 6	29·62	W.	0·05	52	42	36	36	38	Cloudy
,, 7	30·19	W.	...	45	38	34	32	34	Foggy

The following journals, magazines, &c., have been received:—Nineteenth Century and After, The East and the West, Proceedings of the Royal Society of Medicine, Quarterly Journal of Medicine, Man, British Journal of Dental Science, Schmidt's Jahrbücher, Public Health, Journal of the Royal Sanitary Institute, Annales de Gynécologie et d'Obstétrique, Revue de Gynécologie, Revue d'Hygiène, American Journal of Tropical Diseases, Deutsche Zeitschrift für Nervenheilkunde, St. Bartholomew's Hospital Journal, Journal of Laryngology, Rhinology, and Otology, British Journal of Children's Diseases, Homœopathic Recorder, Guy's Hospital Gazette, British Journal of Inebriety, Cleveland Medical Journal, Clinique Infantile, Science Progress, British Dental Journal, Medical Chronicle, &c.

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